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Vol. XXXIV

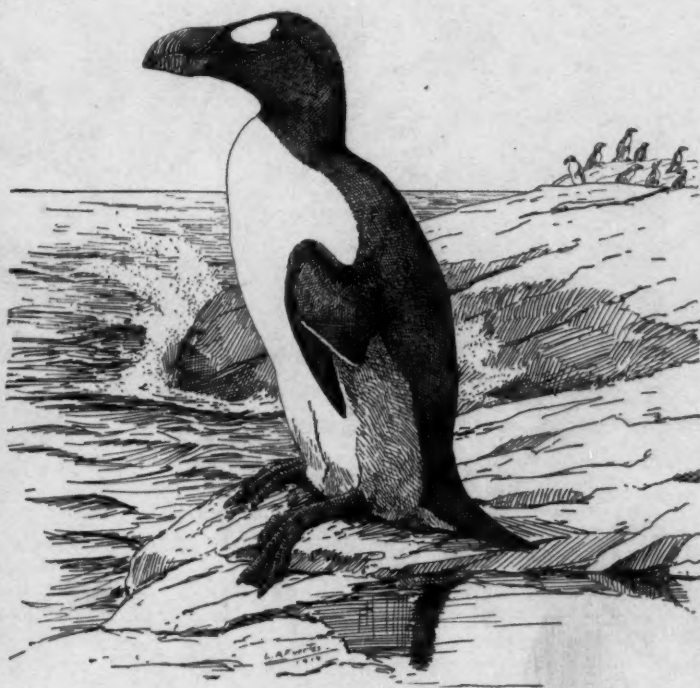
The Auk

A Quarterly Journal of Ornithology

Vol. XXXIV

OCTOBER, 1917

No. 4



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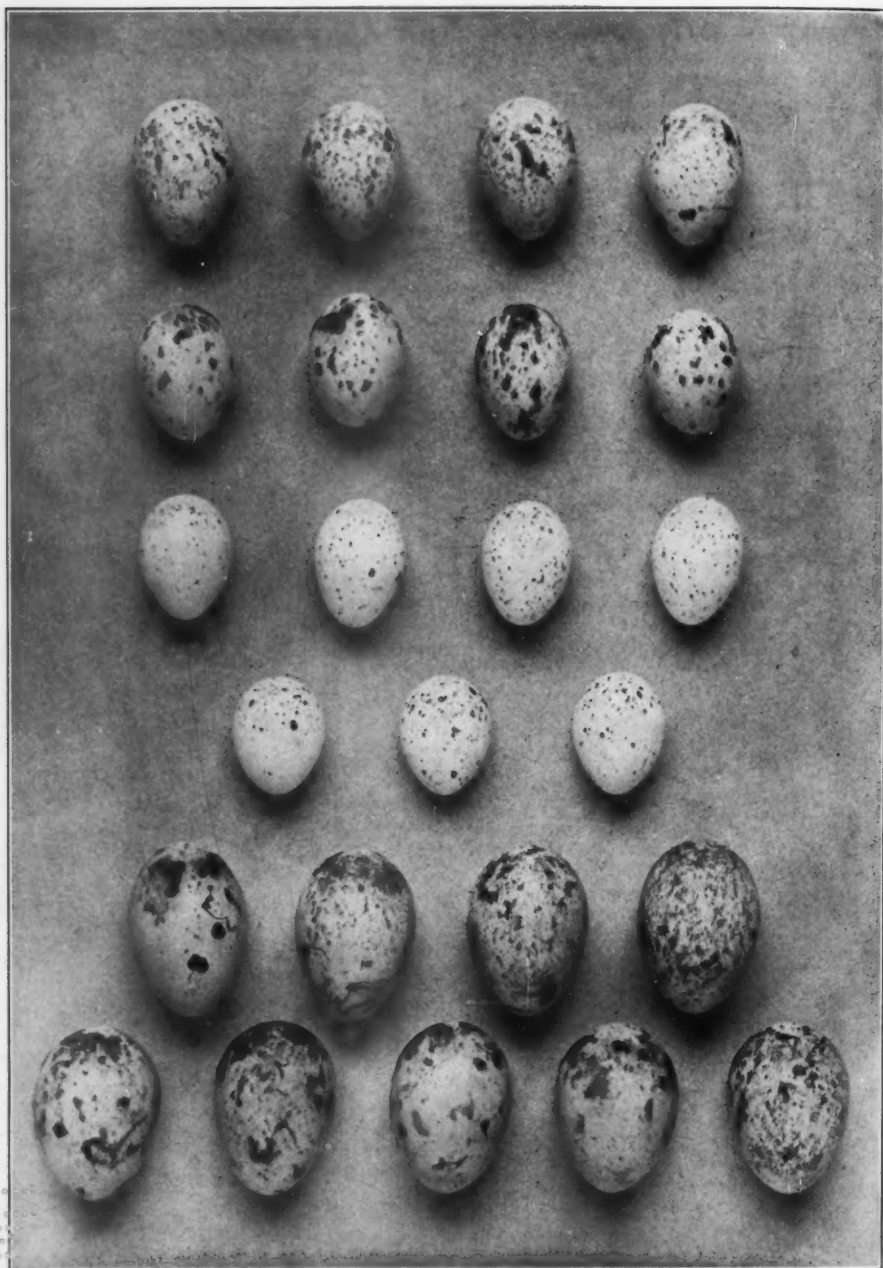
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1870

1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1880



NATURAL SIZE.

PHOTO. BY L. W. BROWNELL.

BLACK-THROATED BLUE WARBLER (1 AND 2).

NORTHERN PARULA WARBLER (3 AND 4).

WHITE-THROATED SPARROW (5 AND 6).

SUCCESSIVE SETS FROM THE SAME PAIRS OF BIRDS.

THE AUK:

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No. 4.

A STUDY OF SUBSEQUENT NESTINGS AFTER THE LOSS OF THE FIRST.¹

BY H. MOUSLEY.

Plates XIII-XIV.

It is the byways I imagine in any science we may take up, that really keeps our interest in it alive. Even when out for a walk the main object with most people is to get off the beaten track and wander into the fields and lanes, and so with ornithology, the highways after a time become exhausted, and the student turns to the byways wherein he may find some interesting problem the solution of which is not to be found in any text book, but will depend upon his own efforts, and so it transpired that some six years ago whilst wandering down one of these lanes or byways so to speak of ornithology, I came face to face with the following problems, no attempted solution of which I have so far seen in print, viz.:

- (1) How many sets of eggs will a bird lay after the loss of the first one.
- (2) What time will be occupied in building a new nest and laying another complete set of eggs.
- (3) Will the succeeding nests be in similar situations, and construction to the first one, and how far will they be from it.

¹ Read before the Nuttall Ornithological Club, March 5, 1917, by Dr. Chas. W. Townsend for the Author.

(4) Will the eggs in the succeeding sets be alike in markings, shape, size and number, to the first ones.

Now we often take up a subject (and so I did this one) without fully realizing the rocks ahead, for little did I think then that it would take me six years before I could collect even a moderate amount of reliable data to work upon, and even now the first question remains only partly answered, and I doubt if it can be fully and with certainty by any one. After a start had been made, it soon became evident that if my data were to be of any use not only would great care have to be exercised in the selection of the ground, such as small detached pieces of woodland etc., where only one pair of birds of any particular species were domiciled, but I should perforce be obliged to put sentiment on one side for the time being, and take the sets one after the other as they were laid. Lucky the botanist who has none of these distressing things to contend with in the pursuit of his favorite study and consequently never incurs the displeasure of Mrs. Grundy. Even now I can hear that august person saying "*Monstrum horrendum*," but there, I have not much regard for Mrs. Grundy, for after this article has appeared in print I shall, no doubt, later on meet the one arrayed in a beautiful hat, trimmed with an aigrette plume or bird of paradise, whilst the other will be boasting of the fifty brace of birds he bagged the day before, without the slightest compunction, whereas the taking of my sets caused me considerable distress, which however, is now over as I do not intend to carry my investigations any further along this particular line, as I consider the answers obtained to all but the first question sufficiently convincing to satisfy most people, except perhaps those who are always willing and anxious to push things to extremes, and who would kill hundreds of small birds in their endeavour to prove that they differed in some slight degree from the type, when no doubt a dozen specimens or so would have accomplished the thing equally as well, *i. e.* if there was really anything to accomplish.

However, to return to my subject and the table I have prepared, from which it will be seen that the time covers the years 1911-1916, and that nearly one half of the fourteen birds enumerated belong to the Warbler family. This is merely a coincidence, the family not having been specially selected, as I had to take a suitable case

Species	Year	1st Set taken	2nd Set taken	3rd Set taken	Incubation
Yellow Warbler	1911	June 2	June 16		3 days
Maryland Yellow-throat	1912	June 6	June 15		fresh
Least Flycatcher	1912	June 6	June 16		fresh
Kingbird	1912	June 11	June 24	July 1	fresh, ?
Catbird	1912	June 21	July 2		fresh
Robin	1914	May 16	May 26	June 5	fresh
Chestnut-sided Warbler	1914	June 6	June 15	June 25	fresh
Prairie Horned Lark	1915	April 14	April 23		fresh
Downy Woodpecker	1915	May 22	June 9		fresh
Myrtle Warbler	1915	May 27	June 7	June 18	fresh
Veery	1915	June 2	June 12		fresh
Northern Parula Warbler	1915	June 5	June 26		5 days
White-throated Sparrow	1915	June 5	June 18		2 days
Black-throated Blue Warbler	1916	June 19	July 10		5 days

Species	Time between sets	Nests in similar situations	Nests alike in construction	Distance of nests from No. 1	Eggs alike in markings or color
Yellow Warbler	11 days	Yes	Yes	250 yds.	No
Maryland Yellow-throat	9 "	Yes	Yes	30 "	Yes
Least Flycatcher	10 "	Yes	Yes	7 "	Yes
Kingbird	13 "	Yes	Yes	0 " ¹	Yes
	7 ? "	No	No	65 " ²	?
Catbird	11 "	Yes	Yes	268 "	Yes
Robin	10 "			15 "	
	10 "	Yes	Yes	37 "	Yes
Chestnut-sided Warbler	9 "			24 "	
	10 "	Yes	Yes	37 "	Yes
Prairie Horned Lark	9 "	Yes	Yes	60 "	Yes
Downy Woodpecker	18 "	Yes	Yes	110 "	Yes
Myrtle Warbler	11 "			24 "	
	11 "	Yes	Yes	67 "	Yes
Veery	10 "	Yes	Yes	25 "	Yes
Northern Parula Warbler	16 "	Yes	Yes	60 "	Yes
White-throated Sparrow	11 "	Yes	Yes	13 "	Yes
Black-throated Blue Warbler	16 "	Yes	No	90 "	No
average = 11 "			average = 66 "		

¹ Same tree.

² Baltimore Oriole's nest.

Species	Eggs alike in shape	Eggs alike in size	Average size of sets	No. of eggs in each set	Remarks
Yellow Warbler	Yes	Yes	.66 × .50	4	
			.67 × .51	4	
Maryland Yellow-throat	Yes	Yes	.69 × .50	3	
			.69 × .50	3	
Least Flycatcher	Yes	Yes	.65 × .52	3	
			.64 × .52	3	
Kingbird	Yes	No	.91 × .68	3	
			.85 × .65	3	
	?	?	?	3	
Catbird	Yes	Yes	.90 × .70	3	
			.89 × .68	3	
Robin	Yes	No	1.19 × .78	4	
			1.10 × .76	4	
			1.09 × .76	4	
Chestnut-sided Warbler	Yes	Yes	.63 × .49	4	
			.65 × .49	4	
			.65 × .50	3	
Prairie Horned Lark	Yes	No	.82 × .58	4	
			.78 × .58	4	
Downy Woodpecker	Yes	Yes	.77 × .60	5	
			.77 × .59	5	
Myrtle Warbler	Yes	Yes	.69 × .53	4	
			.70 × .52	4	
			.70 × .53	5	
Veery	Yes	Yes	.84 × .64	4	
			.84 × .65	4	
Northern Parula Warbler	No	No	.64 × .47	4	only nests
			.61 × .47	3	ever found
White-throated Sparrow	Yes	Yes	.87 × .62	4	Uncommon
			.87 × .63	5	sets
Black-throated Blue Warbler	No	No	.70 × .51	4	only nests
			.66 × .50	4	ever found

whenever it presented itself, and incidentally the *Mniotiltidæ* seem to have predominated. The headings to the various columns sufficiently explain them I think, but I propose to give some details concerning each bird enumerated, following the order in which they appear in the table.

Commencing with the Yellow Warbler (*Dendroica aestiva aestiva*), I may say that it is of very erratic appearance at Hatley, as may be judged by reference to my 'Birds of Hatley,' Auk, Vol. 33, 1916, p. 178, and the pair now under notice were the only ones seen in 1911. The first nest was found in a little patch of alders bordering a small stream in front of my house, and was placed in the forks of one of these saplings five feet above the ground, the second being in a similar situation only 150 yards further up the stream. As regards the sets of eggs they form one of the few exceptions where neither are altogether alike in ground color and markings, the former in the first set being of a greenish white with bold markings forming a wreath at the larger end, whilst that in the second is of a bluish white, with much less pronounced spots and wreath, the size however, being about the same in both cases. It was not before incubation had been in progress I estimated three days, that I found the second set, although the birds were observed in the neighborhood off and on all the time, but disappeared entirely and were never seen again after the taking of this last set. Notwithstanding the somewhat marked difference in the eggs which consisted of four in each case (the nests being exactly alike in construction) everything else is in favor of, and I have no misgivings in my own mind but that they belonged to the same pair of birds.

The site of the Maryland Yellow-throats' (*Geothlypis trichas trichas*) nests, was on the borders of "the marsh" so often mentioned in my 'Birds of Hatley,' the first one being on the ground at the foot of a very small nut shoot, amongst long grass, whilst the second was hidden in similar material at the foot of a small bramble. The eggs, three in number in each case, are all practically free from spots at their smaller end, whilst being zoned at the larger, and so alike are they in shape, size and markings that when mixed up, one cannot with certainty separate the two sets. Here again after the taking of the second set the birds were never seen again, but in the following year my youngest son, whilst gathering wild fruit, came upon another nest (and set of eggs far advanced in incubation and which hatched out two days later) only a few yards from the site of the first one of the year previous, and I was thus luckily enabled to see and note that these eggs were almost counterparts of the others. I mention this case of the birds returning to the old site, as well as

some others later on, for a particular reason, which will appear hereafter.

The account of the Least Flycatcher (*Empidonax minimus*) presents nothing unusual, both nests being placed in the forks of apple trees (only seven yards apart) in an orchard near my house, the eggs in each case being identical in shape, size and number. The birds were not seen again after the second set was taken, but the orchard has been occupied by a pair (the same I feel sure) every year since, and one of the two trees was built in again on one occasion. Our next case the Kingbird (*Tyrannus tyrannus*) is a peculiar one in many ways. The first nest was in an apple tree ten feet above the ground, and after the first set was taken the birds remained near the site in an undecided kind of way, often perching in the tree and inspecting the nest. Eventually they made up their minds and did a little repairing (made necessary owing to the raids of other birds upon it for building material) and then laid another set of eggs. Upon these being taken they selected an old Baltimore Oriole's nest in a somewhat tall maple in front of my house, where I could not reach them. Here in this strange abode they laid a third set of eggs and brought up a brood. The following year they were back again in the apple tree, and repaired the old nest, and I did not molest them. The markings on the second set are similar to the first, being generally distributed all over the eggs, rather smaller however in size and not quite so abundant at the larger end as in the first set. The shape is similar but much smaller, in fact they are the smallest set of Kingbirds I have found so far, the number however in each case was the same viz. three, and as I only saw three young birds, I have assumed that the third set contained the same number also. I have taken seven days as the time between the second and third sets (there being of course no nest to build only to repair) the female commencing to incubate on that day as near as I could tell.

The Catbird's (*Dumetella carolinensis*) first nest was in a little wood adjoining "the marsh" and was placed in a nut bush overhanging the water. When the first set of eggs was taken they forsook the wood and built a second nest in a somewhat exposed thorn bush 268 yards (the greatest distance recorded) further along the marsh on the same side, but away from the water's edge.

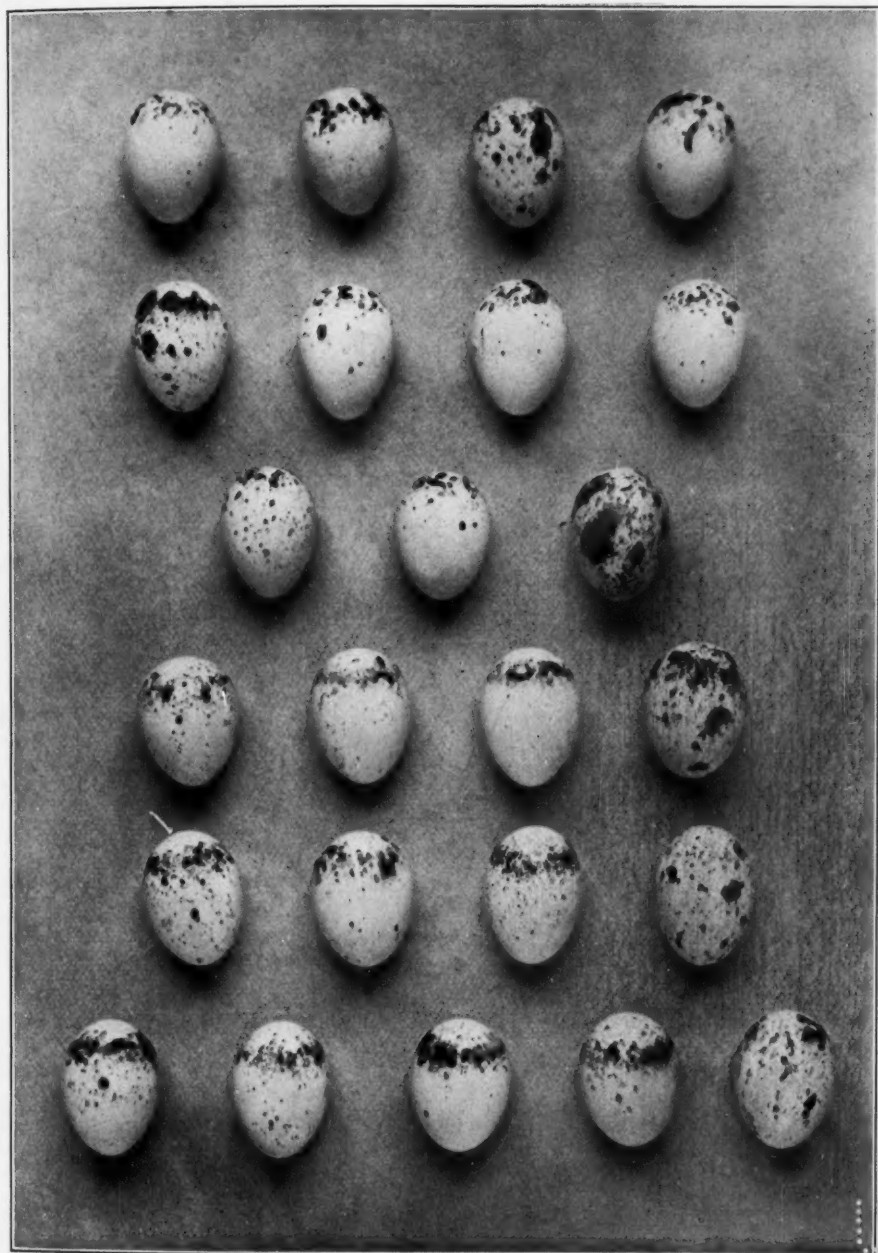
The eggs in each set were three and practically alike in every respect. The birds could not be traced again after the taking of the second set, but the wood has been occupied again more than once, and the very same thorn bush was built in the following year. The nests of the Robins (*Planesticus migratorius migratorius*) were also situated in the little wood just mentioned above, and all three were placed on the fence rails bordering the same. The first set was a large pear-shaped one, being the largest in point of size that I have found so far. The succeeding ones were similar in shape but dropped down a good deal in point of length, and all three contained four eggs. After the taking of the last set, the birds could not be found again. They were certainly the only pair of Robins domiciled at the time in the wood.

The Chestnut-sided Warbler (*Dendroica pensylvanica*) is the next one on the list, and is interesting in many ways, if only for the reason that it was the first time I had come across a nest or even noticed the species here, the only others seen that year being a pair at Ayers Cliff some six miles away. The site of the three nests was on the roadside, the first being in the forks of a small nut bush three feet above the ground, the second being in a similar situation 24 yards to the south on the opposite side of the road, whilst the third was on the same side as the first, in a raspberry cane, 37 yards to the north, all three nests thus being within a space of 61 yards. They were identical in construction, one peculiarity about them however being that fine fir twigs were partly used in their outward construction, a material I have not noticed in subsequent ones found. The eggs are handsomely and somewhat boldly marked and wreathed at their larger end, the smaller or pointed end being generally free from spots with one exception, that of the last or eleventh egg laid, which is not only the largest of the series, but is more heavily blotched at the larger end, as well as finely speckled all over the smaller or pointed end than any of the others. If this egg is removed the remaining ten are practically counterparts of one another, although the average size of each set varies a little, the first curiously enough being the smallest of the three, whilst the third is the largest in this respect, but the smallest in number of eggs (which one would naturally expect in a third set) there being only three instead of four as in the other

two. After the taking of the third set the birds were not seen again, but in the following year a pair were noticed in the vicinity, but I failed to find their nest. The next year (1916) however, they were there again, and this time I found the nest and set of eggs (heavily incubated) which were very similar to those of 1914.

The Prairie Horned Lark (*Otocoris alpestris praticola*) is another interesting species, and the two nests under notice together with some others have been fully dealt with in my paper on the breeding of the species at Hatley (see Auk, Vol. 33, 1916, pp. 281-286). They were both on the ground in a large field near my house and were exactly like one another in construction, both having the "paving" peculiarity, to draw attention to which the above article was specially written. The eggs were all alike as regards shape and markings, which latter consisted of very minute specks over the entire surface, with a somewhat pronounced zone at the larger end, the second set however being smaller than the first as regards dimensions, but both containing an equal number of eggs viz.: four. After taking the second set the birds forsook this particular field (much to my disappointment as I had hoped to still further corroborate the period at which the "paving" to the nests is added) but some were seen about the district until June 22. The following year (1916) however another nest and set of eggs was found in this same field by my youngest son on May 30, this nest also exhibiting the aforementioned peculiarity, there being no less than 46 small pieces of cowchips, stones and lichen, making up the "paving" or banking, which fortunately with the nest had not been disturbed in any way, although the eggs had been abstracted by someone, before I had an opportunity of seeing them a few days after.

The Downy Woodpecker (*Dryobates pubescens medianus*) presents nothing specially interesting, the first nest being in a dead elm tree eighteen feet above the ground, the entrance hole being one inch in diameter, the extreme depth eight inches and the average width two and one half inches, the second one being almost identical, but only six feet above the ground, in a dead poplar stub. The eggs in both cases are all practically alike, the second set being just a shade less in thickness. No further nest could be located after the second set was taken, but the elm tree was made use of again the following year, a new hole being excavated on the oppo-



NATURAL SIZE.

PHOTO. BY L. W. BROWNELL.

CHESTNUT-SIDED WARBLER (1, 2 AND 3).

MYRTLE WARBLER (4, 5 AND 6).

SUCCESSIVE SETS FROM THE SAME PAIRS OF BIRDS.

1000000
1000000
1000000
1000000
1000000

site side of the tree, only a little lower down, but the birds were not disturbed.

The Myrtle Warbler (*Dendroica coronata*) coming next, forms a specially interesting case. The species is a rare breeder here and I have only found the nest of one other pair of birds so far, and that was some distance from the present site, which was on the borders of a somewhat extensive wood. Here in a small fir, three feet above the ground the first nest was found, only four yards away from the site of the previous year's one, which contained four young birds when I found it. The second one being 24 yards to the south of it, also in a fir and three feet up, whilst the third was 64 yards likewise to the south and in a similar situation only six feet up, all three nests being close against the trunk, and fac-similies of one another as regards construction. The sets present many interesting features, the third one being not only the largest as regards dimensions, but also as regards the number of eggs, there being five instead of four as in the other two cases, a most unusual thing and quite contrary to what one would expect, although curiously enough my friend Mr. L. M. Terrill, writing in the 'Ottawa Naturalist' for November 1904, mentions the fact of his having come across a second set of this same species, in which the number of eggs was five as against four in the first set, the markings however being the same in both cases. All the eggs are zoned at the larger end, the rest of the surface being pretty free from markings of any kind, with the exception of one egg in each set (the last one laid as I was careful to note) which not content with being lightly blotched all over, is also the largest egg in each set, just as was the case in the last one laid of the third set of the Chestnut-sided Warbler. It is an interesting and curious fact and one which I am constantly coming across that the last egg laid of a set, often has some peculiarity about it, being different from the rest as regards either the ground color, markings, or size. After taking the third set the birds were not noticed again, but in the following year (1916), I came across a male in this same locality on June 21 and again on July 9, on which latter date it had food in its beak, so I concluded there were young about, but I failed to find any nest. The Veery (*Hylocichla fuscescens fuscescens*) is not plentiful here, so when a nest was found in a little willow swamp it seemed a suitable

case, and the first set was taken, the second being found ten days later only 25 yards away from the first. Both nests were on the ground in tufts of grass in the center of little hummocks, and each contained a set of four eggs, identical in color, shape and size. After the loss of their second set the birds forsook the wood, and were not seen again.

We now come to the Northern Parula Warbler (*Compsothlypis americana usnea*) a rare summer as well as transient visitor here, in fact I have only seen four examples so far, the present pair in the summer of 1915, and an adult female and immature in the fall of 1916. The two exquisite little nests were located in a somewhat extensive wood where in a limited area long streamers of usnea lichen hang from a few fir trees, and it was in these that they were found, the first 35 feet, and the second 25 feet above the ground, both pensive and composed entirely of usnea lichen, and lined with a little plant down, the first containing a set of four pear-shaped eggs, and the second, one of three, the latter not only being less in number, but also smaller in size, the spots however being rather more numerous, a little larger and forming a more decided zone at the larger end. They were also incubated about five days as near as I could tell, which would allow an interval of sixteen days between the sets, this time fitting in very well with that occupied in building the first nest and laying the four eggs, which was seventeen days, as I was fortunate enough in observing the birds on the day, or day after, the nest was commenced. After the second set was taken they disappeared and I never saw them again, nor did they return to the locality the following year.

The first set of the next species, the White-throated Sparrow (*Zonotrichia albicollis*), was found very close to the site of the first nest of the Northern Parula Warbler, and from its surroundings did not seem to offer a very good case, in fact I should not have taken the set, had it not been for the large size and exceptional beauty of the eggs, the ground color of which, especially when fresh, being of a pronounced greenish blue, heavily blotched with rufous brown and black scrawling, the latter of a pronounced type for this species, in fact more like that of a Red-winged Blackbird, whilst the size is beyond the average. I consider this by far the rarest type in White-throated Sparrow's eggs. After the taking of

this set, I visited the locality on many occasions in the hope of securing another set, but it was not until June 18 that I was fortunate in flushing the female off another (which I estimated was about two days incubated) only thirteen yards from the site of the first. These were counterparts of the first, just a shade thicker, and breaking the general rule by being five in number, instead of four as in the first set. Another interesting feature (already remarked upon) is that one egg in each set (I can only positively say it was the last one laid in the first case, as incubation had commenced as already mentioned in the other before I found it) differs from the others, the markings being much smaller and all over the surface with no pronounced blotches or scrawling of any kind. After the taking of the second set, I was unable to locate another nor did I come across the birds in the neighborhood again.

We now come to the last, but by no means the least interesting example in the table, that of the Black-throated Blue Warbler (*Dendroica caerulescens caerulescens*) and one which I was at first uncertain whether to include or not, on account of the great difference in the size and construction of the nests, as well as in the shape, size and markings of the eggs, but after a careful weighing of the pros and cons of the case, I have come to the conclusion that I was really watching the same pair of birds and have therefore included them. The first nest was placed in the forks of a small maple sapling three feet above the ground, the second being in a similar position but only fifteen inches up, and ninety yards east from the site of the first, the outside depth of which was $4\frac{3}{4}$ inches, and was composed for the upper part of woven cedar or grape vine bark, whilst the lower portion was of loose white birch bark, the lining consisting of slender rootlets and some hair. The second was only $2\frac{1}{2}$ inches in depth and was composed almost entirely of rotten or pithy wood (so characteristic of the species) held together by fibrous materials, and lined with fine black rootlets and black and white hair. The first set of eggs was pear shaped and minutely spotted, whilst the second were more oblong and boldly marked the thickness however of each being practically the same, the difference arising in the length as will be seen from the table, and in many ways they greatly resemble the two sets of the Northern Parula Warbler especially in shape, the first in both cases being

pear shaped, whilst the second are shorter and oblong, facts I had not noticed previous to the preparation of this paper. After taking the second set the birds were not seen again, nor was any other nest found in the locality, even when searching after all the leaves were off the trees.

It only now remains to sum up the evidence and arrive at the answers to our questions, to do which I must ask my readers in the case of the first one, to assume for the moment that the second or third set of eggs (as the case may be) laid by the birds were the last ones for that season. This being so, the table gives us the following results, viz.:

(1) That 70% of the birds laid one set of eggs only after the loss of the first one, the balance or remaining 30% laying two.

(2) That the average time occupied in building a new nest and laying another complete set of eggs is eleven days.

(3) The evidence in this case all points to the fact of the second or third nest being in a similar situation to the first one, the average distance from it being sixty-six yards.

(4) Here likewise the evidence is all in favor of the eggs in succeeding sets being of the same color, markings and shape as the first ones, but as regards size 57% only appear to be the same in this respect, the remaining 43% differing, and in the matter of numbers 70% of the sets contain the same as the first, whilst the balance or 30% differ, this difference apparently being about equal, half consisting of more, and half of less than the original set.

Now if it were possible that the answer arrived at to our first question, "Might be the be-all and the end all; here," then we'd jump, not the life to come as Macbeth says, but the suppositions to come, for suppose these second or third sets as the case may be, are not the final efforts of the birds at reproduction, what then? Why, so far as I can see no satisfactory answer will ever be forthcoming, for should the birds after leaving the site of their second or third ventures, betake themselves to a fresh locality say a quarter of a mile or more away, how could I or anyone else be able to locate them again, and even if it were possible to do so, and we could secure that set also, they might move off again, and so the thing would go on ad infinitum, except for the reason that we know in the case of wild birds they only lay at a particular season of the year,

but for just how long that season lasts or the reproductive faculties of the birds remain active I am unable to say. Perhaps doctors from their special training may be able to throw some further light on the subject, in the meantime I have formed an opinion of my own (perhaps erroneously) that when birds forsake the vicinity of the nesting site after the loss of their second or third set of eggs, they do so because the power or natural instinct of reproduction has reached its limit, and is over for that particular year. In support of this theory, I have constantly referred to the fact of so many of the birds returning the following year to the old nesting site, and in the case of the Kingbird, Downy Woodpecker and Catbird, actually occupying the same trees and bush again. Now is it reasonable to suppose that they would do this, if after deserting the site the previous year, they had found a fresh one, and brought up a brood? Surely they would have returned to that site with its pleasant associations, rather than to the one with its unpleasant recollections.

In conclusion it seems to me that the more and more we go into these bird problems, the more is the fact brought home to us of the very little we really know concerning them, and at best our solutions in most cases can only be approximate ones after all.

SOME ALASKA PENINSULA BIRD NOTES.

BY CHARLES A. GIANINI.

THE wandering bird lover if fortunate sometimes finds himself in a bird paradise — such was my good luck last Spring when I landed in Stepovak Bay on the south side of the western end of the Alaska Peninsula. My time while on the mainland was pretty well taken up with hunting the big brown bear of that country, but I always had a welcome eye for birds and now that I am home in the east and the trip in retrospect it is questionable whether bears or birds gave me the most pleasure but certain it is that one without the other would have left a void.

The country surrounding this great bay is inhabited for about six months every year and then only by a limited number of trappers who make their homes on the outlying islands and come here in the Fall and leave in the Spring. The shore of the main bay is indented by smaller bays and each has its trapper's shack or barabara, and as the men usually trap in pairs the population amounts to about two exclusive of any women and children for each bay. The trappers arrive when most of the birds are either gone or travelling south and leave when they are coming in so that the birds of this big section of country are practically unmolested save by some of the predatory members of their own family and a few four-footed hunters. The country remains wild and in its original state and offers every attraction to breeding birds in the way of shore, grass, shrubbery and cliffs; everything but large trees of any kind, for these last do not grow on this part of the peninsula.

Two of us and our dunnage on the 25th of May were landed on the beach at daybreak and I was immediately treated to the spectacle of a couple of jaegers worrying a gull but the arrival of gull assistance put the former to flight. We hunted from two camps, the main one a cabin a couple of hundred yards from the sandy beach and the second a tent pitched on the bank of a river five or six miles inland. Both were in great flat valleys surrounded by high snow-covered mountains with glaciers and a steaming volcano for variety.

The country surrounding the main camp is very flat and the whole intersected by a number of glacial streams and dotted all over with ponds; in places there are long stretches of sand and gravel and many marshes and patches of tundra. A good part of this is made land and is still in process of formation as is plainly shown by the successive old beach lines which extend inland quite a distance. That the big mountains are gradually breaking up and wearing away is perceptible and a fine example of one method could be seen from the camp. About five miles away stands what was at one time a volcano but the side facing the camp had been blown out and down into the valley leaving exposed a great core of sulphur which however, is protected from grasping hands by an intervening river of ice.

Alders and willows follow the river courses and of the latter there must be five or six varieties from a low creeping shrub to a fair sized tree. A variety of grasses grow here both tall and wide of leaf. Flowering plants abound in season though some are very minute and hug mother earth for warmth and comfort. Many varieties of plants would be recognized by name but not in substance, however the marsh marigold was a pleasant surprise one day found blooming early as it does in the east. A beautiful variety of the wild geranium was everywhere abundant in July. One day while laboring up the verdureless side of a bleak mountain I found growing in the slides of rotten stone a few groups of a brave little plant some with red and others with yellow flowers surrounded by rounding leaves and the whole not over an inch in height; they proved to be of the saxifraga family. In some places violets were as plentiful as in our woodlands in Spring and the day I shot my largest bear I wore a boutonniere.

The great coarse cow parsnip was very common and the dry stalks furnished the kindling for our fires.

In season a choice of berries is offered from the crow berry nestling close to the ground to great luscious salmon berries half as large as your thumb. Ferns are there in quantity and variety from tall, stout brakes to a very delicate *Filix fragilis*, but none appealed to me more than our own little polypody which I found growing in the sides of great cliffs.

In bear hunting there are many enforced waits and these intervals

when weather permitted were devoted to bird observations and the surprises and treats were many. The first morning ashore after getting our duffle and outfit under cover and arranged, I went afield and for a time I saw such a variety of birds that I wished for a pair or two of extra eyes. Some birds I had seen before but a few were entirely new to me and as I did not collect any there were several I was unable to name. The following list is of birds positively identified — Holbøll's Grebe, Red-throated Loon, Long-tailed Jaeger, Herring Gull, Arctic Tern, Mallard, Scaup, Northern Phalarope, Least Sandpiper, Black Turnstone, Willow Ptarmigan, Bald Eagle, Savannah Sparrow and Pipit. Never before had I fallen into such company and such a number in so short a time and limited extent of territory.

As I journeyed about the country and bay my list of birds increased so that I shall name them in accordance with the A. O. U. classification:

Colymbus holbøelli. HOLBØELL'S GREBE.— I had seen before but not in his spring feathers. I first saw two in a pond and on June 17 a flock of fifteen swimming in the bay. I found no signs that they breed here.

Gavia pacifica. PACIFIC LOON.— Quite common and seen more often off the beach and in the rivers than about the ponds. I have no doubt it breeds here as it was noticed almost every day up to the 12th of July when we left for the westward in a small boat.

Gavia stellata. RED-THROATED LOON.— Was very common and breeding; I saw as many as five at a time on a small pond. They are passing continually back and forth from the ponds to the big bay and in flying the outstretched head and neck are bent at a slight downward angle to the body. They are very noisy, have a coarse quack on the wing and a jeering, *graah, graah*, on the water. They keep up their calls away into the night but at their breeding period daylight continues to almost midnight. These loons are tamer and easier to approach than the other variety.

Lunda cirrhata. TUFTED PUFFIN.— Often seen in the bay. First noted in Cook's Inlet on the 20th of May.

Brachyramphus marmoratus. MARBLED MURRELET.— Seen in the bay singly and in pairs. Not very wild and allowed a close approach in a row boat.

Cepphus columba. PIGEON GUILLEMOT.— Common about the bay and not very wild.

Stercorarius parasiticus. PARASITIC JAEGER.— Quite common. I collected one in the dark color phase.

Stercorarius longicaudus. LONG-TAILED JAEGER.— They are com-

mon and I sometimes saw four or five at a time around the small ponds. I collected one in the light color phase which when held up by the feet vomited crow berries.

Rissa tridactyla pollicaris. PACIFIC KITTIWAKE.—They were nesting on a rocky islet in the bay and had their nests on shelves and tops of rocks as close together as they could be placed. They allowed me to make a close approach and gather a mess of eggs which our menu was sadly in need of. On June 17, the nests contained some two and others three eggs and part of them we found to be in the process of incubation. As we approached the island a half dozen of cormorants sat on the rock looking for all the world as some one has remarked "like black bottles."

Larus glaucescens. GLAUCOUS-WINGED GULL.—Were here but in no great numbers.

Larus schistisagus. SLATY-BACKED GULL.—I noted but one or two here.

Larus argentatus. HERRING GULL.—This gull has hardly ever been out of sight since leaving Seattle. They followed the steamers, the various canneries had immense colonies and here the beach and ponds were alive with them. They had selected one pond with boggy shores and small islands for a breeding ground. On May 27 I found on the bank two nests containing eggs—one with two and the other three eggs. There were probably more nests on the little islands but I was unable to reach them. On June 29 there were some young on the pond.

At a salmon saltery where I spent a few days after the 15th of July I watched these gulls feeding. The salmon were split and dressed on a staging over the water close to the beach and all undesirable parts tossed overboard and the great bunches of eggs hardly reached the water before the gulls would have them and two or three gulps were sufficient to put them out of sight.

Larus brachyrhynchus. SHORT-BILLED GULL.—This gull was here and associating with the Herring Gull. Was nesting at the same pond.

Sterna paradisæa. ARCTIC TERN.—Positively the most graceful bird I saw on this trip and the only representative of the family here. They were here in limited numbers but never failed to make their presence known either by their rasping cries or their acrobatic flying. They have a habit of remaining in a fixed position in the air supporting themselves entirely by their vibrating wings with the balance of the body stationary. They do this over both land and water and from this position often dive into the water for fish disappearing entirely for two or three seconds at a time. I noted that they did not always catch their prey.

They must breed here for I saw them almost every day of my stay.

Fulmarus rodgersi. RODGER'S FULMAR.—This bird while undoubtedly coming into the bay probably has no justification for being introduced here but the capture of one by rather unusual methods is my apology. On the 26th of July while the coast guard steamer 'Unalga' in which I was travelling to Seward, was to the eastward of the Shumagin Island a young

fulmar came aboard into the fireroom by way of a ventilator. The bird was very tame and showed no fear of us and was given its freedom after we passed on its identity. One of the officers called it a "scupper bill" — a new name to me.

Phalacrocorax auritus cinnatus. WHITE-CRESTED CORMORANT.— Those I saw here I took to be of this variety. They were frequently seen about the bay and often high up, evidently travelling across the peninsula either to or from the Bering Sea side.

Anas platyrhynchos. MALLARD.— Here in good numbers and breeding. Every inland trip we made we found these ducks in the marshes and about the ponds and streams.

In front of our home camp was a pond with sedgy shores which was visited by a great variety of ducks and Mallards often came here early in the morning to feed.

Mareca americana. BALDPATE.— On the 2nd of June near our camp on Big River, I saw a pair of these ducks, the only ones I noticed.

Nettion carolinense. GREEN-WINGED TEAL.— Common and breeding.

Dafila acuta. PINTAIL.— Common and breeding. Saw my first one in a pond in front of camp on May 29; and from the 17th of June, when we returned there, until the 12th of July, a male and two females made the pond their headquarters — feeding and napping there.

On the 4th of July, six lively ducklings appeared on the pond and some were seen on other days after this. I took them to be young Pintails, yet I never saw them with the old birds nor did the latter seem to pay any attention to them. Mallards and Green-winged Teal also visited this pond but not to such an extent as the Pintails and this causes me to think that the young were of the last named species.

Marila marila. SCAUP DUCK.— Very common and breeds.

Histrionicus histrionicus. HARLEQUIN DUCK.— Fairly common. Seen on the rivers particularly near the mouth and among the rocks along the shore of bay. The first I saw were at Chignik on the 23rd of May; three of them in the gentle surf close to the sandy beach. While they are fairly watchful I found I could make a close approach by careful management.

Somateria v-nigra. PACIFIC EIDER.— Not very common. I saw but a few about the rocks close in shore.

Oidemia perspicillata. SURF SCOTER.— I saw a large raft of these Ducks in the bay one day in June.

Lobipes lobatus. NORTHERN PHALAROPE.— This is one of the most common and interesting of the smaller birds. Every pond had a pair or more. They could be seen almost any day on the pond in front of our camp. I found no nests nor saw any young, yet these birds breed here. They are unsuspicious and allow very close approach. They are very graceful in the water, sit very high and seem to move about without any effort. I did not see them do the "circling" act but noticed that

they swing right and left as they sail along picking up particles of food from the surface of the water. They also have a habit of bobbing the head forwards and backwards as they proceed. They rise from the water with great ease. Along the beach they fed close to the water and seemed to jump over the incoming ripples. They sing a *tweet-tweet* note on the wing which is often heard before the birds can be seen or located. These birds and the other two species of the same family are exceptions to the general rule in that the females are slightly larger and more brilliantly colored and while they lay the eggs the males incubate them.

I observed that the necks of these birds are more slender and delicate-looking than is usually shown in drawings.

Pisobia minutilla. LEAST SANDPIPER.—Common and breeding here. On the 7th of June I found a nest containing 4 eggs on the tundra; the female jumped off at my near approach and tried to draw me away by the usual feigning methods. Nest was a depression in the ground lined with grass and small round leaves of some shrubby plant.

These birds are very tame and have a twittering song in the air and when on the ground. They spend considerable time feeding on the beach.

Ægialitis semipalmata. SEMIPALMATED PLOVER.—I saw my first one on the 26th of May and from that date on until we left they were very common. They are very tame and show little fear of man. Often found along the beach and further inland but never far from water. I watched one feeding along the beach; he would run a yard or two, stop and pick up some morsel, and repeat the performance which was continued for some distance.

One day while resting on a sand bar close to a stream I had a bird come very close and circle completely around me at the same time uttering its call notes. Soon a second bird, its mate, appeared, answered the call and came near but did not repeat the performance. This happened on the 16th of June and caused me to think I must be near the nest, but I was unable to find it.

Arenaria melanocephala. BLACK TURNSTONE.—On the 25th of May I saw my only one, working about the rocky shore of a pond.

Lagopus lagopus lagopus. WILLOW PTARMIGAN.—They are fairly numerous on the lower levels but do not range very high on the mountains.

On the 7th of June I found a nest containing seven eggs. My guide remarked that it was unusual that in all our travels we did not find another nest. There are many foxes and wolverines here and they undoubtedly take a rich toll.

In Newfoundland I do not recall ever seeing a ptarmigan perched in a tree of any kind — here it was common to see them in alders and willows.

Lagopus rupestris rupestris. ROCK PTARMIGAN.—On the mountains they are occasionally met with but do not seem to be very abundant. When climbing a mountain if any birds are about they soon make their presence known by their coarse notes which are easily distinguished from those of the other species.

Archibuteo lagopus sancti-johannis. ROUGH-LEGGED HAWK.— This was the only hawk that I was able to positively identify — I collected one. They were in fair numbers and nesting on the cliffs both overlooking the bay and further inland.

Evidently there is mutual respect between them and the Bald Eagle, for I have seen their nests on the cliffs in close proximity to each other. They were very noisy at times.

Haliaeetus leucocephalus alascanus. BALD EAGLE.— It was in evidence along the coast all the way from Cordova; when traveling along near the shore a white spot in the edge of green timber usually produced an eagle. Here they were numerous and from the home camp I could always see them along the beach or the banks of the rivers. Many codfish were stranded on the sands and afforded an abundance of food for eagles and gulls and they were generally closely associated. They nested on the cliffs overlooking the bay and further inland as well, but always near water. On the 31st of May I found a nest containing two eggs. On the 2d of June I found another nest containing only one egg; this nest was a mere depression in the heavy grass situated on the top of a butte inland and overlooking Big River. It was easily approached. It never contained more than the one egg and on the 15th of June this was destroyed by gulls. On the same day I saw two gulls attacking an immature but large eagle and one of the former gave a wonderful exhibition of flying — making a complete downward somersault in mid-air.

On the 28th of June I found a nest on the cliffs overlooking the bay containing two young which I photographed. They were as large as fair sized chickens and covered with grey down in appearance like wool. They looked well fed but were very logy and I was obliged to stir them up to make them look animated. The nest was clean but close by were the bones and remains of quite a few water birds. The carcass of the first bear obtained was left in an open park surrounded by ridges and whenever we passed that way we were certain to find a gallery of eagles and ravens. I learned that eagles were sometimes shot by the people up here for the plumes found on the body under the wings.

Cryptoglaux funerea richardsoni? OWL.— The guide told me of a small owl he had often seen in the alders and willows but I was never fortunate enough to see one. On several occasions late in the afternoon, I heard the notes of some species of owl and I thought it might be the Richardson's.

Pica pica hudsonia. AMERICAN MAGPIE.— This bird quickly made his presence known about camp and compelled us to protect any fresh meat we desired to keep for ourselves. The guide set baited rat traps for them but they proved too wary to be caught that way. Their bulky nests were often seen in the alders. Some fully feathered young were common among the rocks along the beach early in July and easily caught by hand.

Perisoreus canadensis fumifrons. ALASKA JAY.— One day in June I saw four birds at one place and they were the only ones I saw.

Corvus corax principalis. NORTHERN RAVEN.—Fairly common; they traveled up and down the rivers. Their wing movements are very noisy when flying and I could always tell when a Raven passed overhead without looking up.

Acanthis linaria subsp.? REDPOLL.—I was disappointed in seeing but one of these birds.

Plectrophenax nivalis nivalis. SNOW BUNTING.—Up here this is a different looking bird from what I see home in the winter — it is a beautiful white and black bird and naturally not found in big flocks as we know it. It is fairly common on the flats and also well up the mountains and no tamer here than further south. I was never able to get close enough to enjoy its little song.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.—On the flats around the home camp in May, June and July the birds were plentiful and I never could walk about without seeing the male sail up in the air a short distance and sing his song; sometimes descending as he sang. They breed here.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW.—Is here in abundance and seen on the tundra and flats and also on the cliffs and rocks of the shore. Breeds.

Zonotrichia coronata. GOLDEN-CROWNED SPARROW.—Fairly common here but seen more frequently inland than near the shore. I heard them first on the 28th of May; notes are suggestive of those of the White-throated Sparrow. They fed about the camp.

Passerella iliaca unalaschensis. SHUMAGIN FOX SPARROW.—A few seen.

Hirundo erythrogastra. BARN SWALLOW.—This was the one bird which brought back most vividly to mind the thoughts of home and to find it here in July optimistically starting a nest was a pleasant treat. On our return to the home camp on the 17th of June I noticed about the place a pair of these birds and one Bank Swallow but in a few days the latter disappeared leaving only the mated pair. Our shack was protected in front by a partially closed veranda and the swallows were in and out continually and in the early morning their twitterings were the first sounds we heard. The cabin proper had several windows, the casings of which had never been sealed up on the outside so that at the top was a long narrow shelf and right after the 1st of July the birds started a nest on one end of one over against the side upright; I only had to raise myself a few inches to overlook the building operation. One of the birds, the female, did all the work; she gathered the mud, made the variously shaped pellets and laid by a small supply of dried grass. First was laid a course of the pellets outlining a space slightly longer one way; then the bird made a number of pellets varyings in size which she placed to one side possibly to dry and furnish a handy stock so that when she got further along she could proceed in laying up the walls without having to wait for materials.

Unfortunately this nest was never completed; the Magpies bothered

the Swallows so they finally gave up the task and moved to other quarters. In the early days before houses and barns were plentiful and afforded nesting sights Barn Swallows nested in caves and caverns and as houses and huts are few and far between here, possibly this pair of birds reverted to primitive ways and resorted to a cave of which there were many in the cliffs along the shore.

The two birds were often together but I only saw the one do any work.

The late date at which the nest was started might cause one to think that they had already raised one family but I doubt this as I never saw more than the two birds.

Riparia riparia. BANK SWALLOW.—I only saw the one previously mentioned.

Dendroica aestiva rubiginosa. ALASKA YELLOW WARBLER.—The guide collected one and I think I saw a few more. Not very common.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.—Fairly common and I often saw them after the 1st of June. Breeds.

Anthus rubescens. PIPIT.—This bird is supposed to breed on high ground but I found it occasionally on the lowlands. Breeds.

Cinclus mexicanus unicolor. WATER OUZEL.—This little bird proved one of my big disappointments. On my way to Alaska I had talked with my guide, who accompanied me, about these birds and he assured me I should find them on almost every stream; in fact they were so plentiful that in his trapping operations he shot them to bait his traps. I was continually on the watch for them and one day when I was very busy with a bear skin in a swift river I caught a hasty glance of one which proved the only one of the trip.

Hylocichla guttata guttata. ALASKA HERMIT THRUSH.—Noted this bird first on the 5th of June and saw and heard it occasionally afterwards. The foggy depressing weather may have had some effect on the bird's spirits but the song I heard could not compare with that of our bird in the Adirondacks.

Penthestes cinctus alascensis. ALASKA CHICKADEE.—One day while hunting inland we lunched in the meagre shelter of some alders and while there several birds put in an appearance. They looked and acted about the same as our eastern Black-cap. These were the only ones I saw.

THE SUMMER BIRDS OF THE ST. MATTHEW ISLAND
BIRD RESERVATION.

BY G. DALLAS HANNA, U. S. BUREAU OF FISHERIES.

THIS Bird Reservation, officially known as the Bering Sea Reservation, is located in Bering Sea about 220 miles north of the Pribilof Islands. It consists of three islands, which named in order of size are St. Matthew, Hall and Pinnacle Islands. These were made a bird reservation by Executive Order of February 27, 1909. Owing to the distance of the group from the regular channels of travel, opportunities for naturalists to visit it rarely occur. It is barren, treeless, uninhabited and surrounded by dangerous and poorly charted waters.

Through a request of the Biological Survey of the Department of Agriculture I was detailed to make an examination of the Reservation in June 1916, but owing to the ice pack remaining in that vicinity until after the middle of the month this was impossible. In July, however, the trip was made, and six days were spent on St. Matthew and Hall Islands. Arrangements were made with the Coast Guard Service for transportation and we left St. Paul Island on the morning of July 7, on the Cutter *Unalga*, Captain F. G. Dodge in command. The next morning the spires of Pinnacle Island were in full view and a landing was made near Cape Upright of St. Matthew at noon. Between then and the 12th almost the whole of this island was examined, and on the 13th we went to Hall Island. Pinnacle Island was not visited on account of adverse weather conditions.

I wish to express my appreciation of the favors extended me by the Coast Guard Service and especially to Captain Dodge and the crew of the *Unalga*, every man of whom willingly and eagerly assisted me on every occasion.

St. Matthew Island is about 22 miles long by two to three miles wide and is slightly curved to the north. Its mountains rise as high as 1800 feet and are weather worn and smoothly eroded in most cases. Some of them have mosses and lichens growing to the tops, but others, especially in the center of the island, are entirely

devoid of vegetation. The rocks forming these latter are weathered into very small fragments, set edgewise and close together and making a natural pavement.

Most of the valleys are covered with reindeer and other mosses and in many favorable places there are true tundra bogs. Vegetation other than mosses and lichens is dwarfed and scant in most places. The rank growths of wild parsnip and wild rye found on the Pribilofs are entirely absent. There are a large number of fresh and brackish water lakes on the island, many of which have been formed by the sea building dykes across from one headland to another. The tide ebbs and flows in some of these, forming lagoons. There are a large number of fresh water streams, many of them a dozen feet across. They wind through the tundra swamps with undercut banks which form ideal spawning and feeding places for the innumerable trout found here.

The mountains are cut into by the sea on every side of the island, making long stretches of towering cliffs, between which the sea has built up beaches of such an extent as to give the impression that the island is much older than the Pribilofs. These cliffs display the most wonderful geological formations I have ever seen. There are beautiful blues, yellows, greens and bright reds in layers or dykes and in places throughout the mass run seams of pure white calcite from two to twelve inches thick.

Evidences of comparatively recent earth disturbances are seen about two miles below Cape Glory of Russia on the south side of the island. The earth and cliffs are torn and tumbled in the greatest confusion. New slides are seen and the beach line boulders are not much rounded. In some places rocks are constantly falling making it dangerous to go beneath the cliffs. Here are nodules from two inches to two feet in diameter composed of a green mineral-like jade, and there are numerous seams in the country rock of banded agate. There is one cliff half a mile long of undoubted sedimentary origin. Numerous fossilized trees some two feet in diameter are embedded near the base. All seen were in a recumbent position and were as black as anthracite coal.

The large number of cliffs with their grand scenic display are notable as the nesting places of countless sea birds. Of all the places I have visited St. Matthew is rivalled in this respect only by

that incomparable bird cliff on St. George Island, but the ledges on St. Matthew are more nearly perpendicular and thus afford less favorable nesting cites.

The lines of drift wood indicate that the island as a whole has had a recent elevation, or that some enormous seas which did not reach the Pribilofs carried the logs high above tide mark. Some logs are about 100 feet above the calm weather water line.

Hall Island is entirely bold and rugged and has no true beach. In fact the top of the island can only be reached in a few gullies where small streams empty into the sea. The vegetation and character of the upland appeared similar to St. Matthew.

Pinnacle Island is wedge shaped and has towering spires projecting high into the air. It is so steep and rugged that snow does not lie upon it. Probably the base of the cliffs might afford a landing place in calm weather but whether or not the walls of the island could be scaled was not ascertained.

The action of the ice on these islands seems inconsequential. No worn pebbles were found back of the beaches nor are there glaciers present. Snow probably remains most of the summer in some of the canyons, since it was very deep in places in early July.

Through the kindly interest of Dr. A. K. Fisher of the Biological Survey I am enabled to incorporate in the present list certain hitherto unpublished notes taken by him on these islands on July 14 and 15, 1899, while a member of the Harriman Expedition. Dr. Fisher's notes, which include four species additional to those observed by myself, are inclosed in brackets, and are followed by his initials.

LIST OF BIRDS OBSERVED.

Gavia stellata. RED-THROATED LOON.—The wailing notes of a single bird were first heard reverberating from the mountains surrounding a lake about the middle of the north shore of St. Matthew. It and two others were later collected and the species was afterwards observed in several of the lakes. It undoubtedly breeds here but efforts to locate the nests were unsuccessful.

Lunda cirrhata. TUFTED PUFFIN.—Many nesting colonies of this species were found on favorable cliffs on both the islands visited. A precipitous rock lying off the northwest end of St. Matthew was scaled and the burrows of this species found undermining the sod and moss com-

posing the summit. Some of their burrows were twenty feet long but so shallow that they could be broken open easily and often bird and egg would be found at the end. A semblance of a nest is constructed of moss and feathers in a shallow depression near the end of the burrow. These burrows are used year after year, usually with a small amount of excavating annually.

Fratercula corniculata. HORNED PUFFIN.—Horned Puffins nest in large numbers on every favorable cliff. Their grotesque heads may often be seen protruding from their burrows near the tops of the cliffs and the few feathers and moss fragments constituting the nest may be found from three to six feet back under the turf covering the top stratum of rocks. This sort of location seems to be preferred, but some nest in deep holes on the sides of the cliffs. On the Pribilof Islands both species of Puffins nest together but on St. Matthew there is much less admixture. The eggs of this species are less chalky, more inclined to be spotted with purple, and are longer than those of the Tufted Puffin.

Phaleris psittacula. PAROQUET AUKLET.—In the aggregate large numbers of this species breed on the islands. They are not usually found in colonies but single pairs nest here and there on the boldest headlands. The single egg is found in a rock crevice and is very difficult to obtain.

Æthia cristatella. CRESTED AUKLET.—Except for a large colony found on the cliffs about two miles south of Cape Glory of Russia this species is rare. It breeds in limited numbers on Hall Island and a few were seen at almost every landing on St. Matthew. They are believed to be less common than on the Pribilof Islands where they form an insignificant portion of the wonderful ornithological display.

Æthia pusilla. LEAST AUKLET.—Four flocks only of this species were seen and these in every case were feeding in the sea just off shore. It is possible a few may breed but none were seen on shore, even on beaches which seemed very favorable for them.

Cephus columba. PIGEON GUILLEMOT.—Found casually on all cliffs where they breed high up and well protected from the foxes. While this species nests at Unalaska and at St. Matthew absolutely none stop at the Pribilofs during the summer. No plausible explanation for this peculiar distribution can be given.

Uria troille californica. CALIFORNIA MURRE.

Uria lomvia arra. PALLAS'S MURRE.—Both species of Murres are exceedingly abundant on all cliffs. On many projecting ledges they nest side by side. When sitting on their eggs they are usually very tame and this enables one to identify a particular bird before the egg is taken. Without such identification it becomes doubtful to which species an egg may belong as eggs apparently intergrade in all characters. The birds may be easily distinguished on the cliffs by color. The species first named is a dull dark bronze on the head and back, while the latter is jet black. Also the bill of the latter is shorter and thicker and it bears a long narrow white stripe below the gape in the breeding season. During the nesting

season the White Foxes live almost exclusively on Murre's eggs and they are very adept at scaling the cliffs for them. Sometimes they bury the eggs in the tundra back of the cliffs and eat them later in the year.

[**Stercorarius longicaudus.** LONG-TAILED JAEGER.—One shot on Hall Island on July 14, 1899, had a Meadow Mouse (*Microtus abbreviatus*), in its gullet, and the remains of another in the stomach. (A. K. F.)]

[**Rissa tridactyla pollicaris.** PACIFIC KITTIWAKE.—Colonies of a hundred to a thousand were found at various places on the cliffs. Substantial nests are constructed of grass and moss in places which are usually just out of reach. The smaller Red-legged Kittiwake was closely watched for but was not seen after leaving the Pribilofs.

[**Larus hyperboreus.** GLAUCOUS GULL.—This is the only member of this genus found nesting on the reservation. The Glaucous-winged Gull may occur occasionally even in mid-summer but it was not noted by me at any time after the Pribilofs were out of sight. The big white Burgomaster was constantly seen while we were about St. Matthew and Hall Islands, either scouring the beaches for carrion or hunting the cliffs for Murre's eggs. It builds its nests of matted grass and moss and keeps a very filthy house. Considerable sagacity is shown in placing the nest in an inaccessible place, usually offshore on outlying rocks which can be scaled neither by man nor fox. One of these however I was able to climb and found on top about 100 nests, one third of which were being occupied. The young, (black speckled balls of white down), were just appearing on July 10 and were just a little ahead of the cormorants. Around each nest were found quantities of the shells of Murre's eggs and the same were found in the stomachs of those birds examined.

St. Matthew Island marks the southern breeding limit of this species in the Bering Sea Islands, save for a small colony on Walrus Island of the Pribilofs, the Glaucous-winged Gull being the common breeding species of the Pribilof group. In fall and winter both species move southward and both are found on St. Paul throughout the fall. In the coldest parts of the winter the Glaucous Gull only is found there.

[**Xema sabini.** SABINE'S GULL.—Two specimens, now in the Biological Survey collection, were secured from a flock of five on July 15, 1899. They were fishing off-shore in company with *Rissa* and *Larus*. (A. K. F.)]

[**Sterna paradisæa.** ARCTIC TERN.—Observed about the islands on at least one occasion, July 14 or 15, 1899. (A. K. F.)]

[**Fulmarus rodgersi.** RODGER'S FULMAR.—This is one of the most abundant birds found breeding on St. Matthew. On every cliff there were very large colonies. Among all the many thousands of birds seen here not one of the dark phase was noted. The single white egg is placed on any kind of a ledge which is large enough for the bird to sit upon.

[**Phalacrocorax pelagicus robustus.** VIOLET-GREEN CORMORANT.—No other Cormorants except this species were found on the reservation although a careful lookout was kept for the Red-faced. Nests were found on almost every cliff and they were especially abundant about the south

end of Hall Island. Here they could be reached without a rope. Young had appeared in a few nests and were ready to hatch in most of the others, yet an egg was taken from a bird killed July 8. This egg was light blue in color, almost devoid of the usual chalky deposits found on most specimens.

The nests are rather capacious affairs constructed of grass and moss from the tablelands above the cliffs, and are very dirty. I believe the bird which sets on the eggs is fed to a certain extent by its mate because there were numerous balls of vomited flesh remains about many of the nests.

Dr. Leonhard Stejneger (Bull. 29, U. S. Nat. Mus., pp. 181-191, Pl. VIII, 1885) has given excellent figures and descriptions, based on external characters, for separating the immature birds of the Pelagic Cormorant from the Red-faced, but nevertheless individual birds are very hard to determine in the field.

Anas platyrhynchos. MALLARD.—A party from the ship reported that a pair of Mallards was seen on July 8, about the lakes on the spit connecting Cape Upright with the main portion of St. Matthew. The birds were well described and I do not hesitate to include the species among the casual breeders although it was not subsequently seen.

Mareca penelope. EUROPEAN WIDGEON.—This species is included in the list solely upon a single wing found in a cabin near Cape Glory of Russia. It had been nailed up for an ornament and possibly may have been brought from elsewhere. It certainly is not a breeding bird on the reservation.

Nettion carolinense. GREEN-WINGED TEAL.—As with the preceding species some wings nailed to the walls of the old trapper's cabin are the basis of the record. They were probably taken on St. Matthew during migration. I did not find any evidence of breeding. These wings may have come from *Nettion crecca* as that is the breeding Teal found in the Aleutian Islands.

Harelda hyemalis. OLD-SQUAW.—A very few breed in the fresh water lakes.

Histrionicus histrionicus pacificus. PACIFIC HARLEQUIN DUCK.—Only one small flock was seen. It was near the beach of Hall Island July 13. [Included under *H. histrionicus* in the A. O. U. Check-List.]

Somateria v-nigra. PACIFIC EIDER.—A female individual was secured on July 15, 1899. (A. K. F.)

Somateria spectabilis. KING EIDER.—This bird was found to be abundant in all lakes which were near the sea. Many of the lakes had only gravel spits separating them from salt water and regular flights back and forth over these were made. Many of the birds were paired and were evidently nesting but eggs were not found. No other Eider appears to visit the reservation in the breeding season.

Olor columbianus. WHISTLING SWAN.—From two to four swans were found about the fresh water lakes at every landing place and while no specimens were obtained I do not doubt the species was the whistling. All were very wary and the country offered poor facilities for stalking. No positive evidence of breeding was found.

Grus canadensis. LITTLE BROWN CRANE.—One bird was seen back of a lake near the middle of the north shore of St. Matthew. At first it persistently stayed on top of the highest knolls but finally flew to a neighboring mountain.

Phalaropus fulicarius. RED PHALAROPE.—Two flocks in full summer dress were found feeding in the surf on the north shore of St. Matthew Island July 11. From June 8 to 14 while we were in the ice in the vicinity of St. Matthew thousands of these birds flew past the ship, headed north.

Lobipes lobatus. NORTHERN PHALAROPE.—This species breeds abundantly about all the fresh water lakes.

Arquatella maritima ptilocnemis. PRIBILOF SANDPIPER.—This is the most abundant bird of the level lands of the islands. Large numbers were in sight at every landing. Fresh eggs, and young birds running about in the grass and moss, were found. On the Pribilof Islands they nest on the highest parts of the islands and not commonly there, while on St. Matthew nearly all stay below 300 feet elevation. The males were beginning to resort to the margins of the lagoons in flocks by July 12.

Arenaria interpres oahuensis. PACIFIC TURNSTONE.—An adult male was found on Hall Island July 13. From its actions it appeared to have a mate and nest near by but they could not be found. It was not observed elsewhere on the reservation. [Included under *A. interpres* in the A. O. U. Check-List.]

Nyctea nyctea. SNOWY OWL.—No birds were seen but feathers were found lining the nests of McKay's Snow Buntings and several pellets containing rodent remains were found. These were so large that the identification of the species is practically certain.

[On Hall Island our party saw several adult Snowy Owls, one of which was killed. A nest found on July 14, 1899 contained four young the largest of which weighed twice as much as the smallest. Two Meadow Mice (*Microtus abbreviatus*), were found at the nest, and pellets contained the remains of Meadow Mice and birds. (A. K. F.)]

Corvus corax principalis. NORTHERN RAVEN.—About a dozen birds were observed on the mountainous Cape Upright end of St. Matthew and strangely individuals did not occur elsewhere. They were high up on the rocky sides of the mountains, apparently eating the crow berries of the year before. Here they would utter notes not unlike the yelp of the white foxes. Indeed the two were so much alike that I was mistaken in the source of the sound for some time. It seems strange that this species has never become established on the Pribilof Islands while it lives everywhere else around Bering Sea.

Leucosticte griseonucha. ALEUTIAN ROSY FINCH.—A few birds nest about most of the cliffs but they are much less common than on the Pribilof Islands.

Acanthis linaria linaria. REDPOLL.—A flock of four flew high overhead while we were on top of one of the bald domes in the center of the island of St. Matthew. They probably do not breed but flocks may fly over at any time as on the Pribilofs.

Plectrophenax hyperboreus. MCKAY'S SNOW BUNTING.—Next to the Pribilof Sandpiper this is the most abundant bird of the level lands. It was most common along the shingle beaches where it nested in old hollow drift logs. One nest was found in an old hollow spruce which had been excavated by some woodpecker on the mainland when the tree was standing. A few birds were found to the tops of the highest mountains. Flying young and fresh eggs were found, indicating that two broods are reared. No other Snow Bunting was obtained and it is not believed that any other resides on the reservation in summer.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.—The Longspur breeds abundantly on the lower parts of the islands. One nest was found loosely constructed of sedges and lined with a few feathers. It contained six eggs. On June 12 an adult male came aboard the ship while we were in the ice and stayed all day. It seemed very fond of cracked hominy.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW.—One was flushed on Hall Island on July 13 but was not secured. Another spent the day aboard the ship while we were in the ice south of St. Matthew June 10. If it breeds at all it is very rare.

Budytes flavus alascensis. ALASKA YELLOW WAGTAIL.—A pair, (apparently from a nest), was found on Hall Island July 13. They were much disturbed at my presence and flew back and forth over my head for half an hour before descending into gun range. It doubtless breeds but rarely.

NESTING OF THE CAPE MAY WARBLER AT LAKE EDWARD, QUEBEC.

H. F. MERRIAM.

LAKE EDWARD lies in the Laurentian hills one hundred miles north of the city of Quebec. Since the great forest fire some twelve years ago a growth of birch, alder and briars has sprung up and a comparatively small part of the country is still covered with the original spruce and balsam. In these restricted areas are to be found in abundance many of those Warblers which find their summer homes in coniferous woods. The islands in the lake are within this class, being wooded for the most part with spruce and balsam of moderate size interspersed with large white and yellow

birches. It was on one of these islands that the Cape May Warbler was found nesting.

The nesting site was discovered on June 7, 1916, when the female was seen carrying material to the thick top of a spruce about forty feet from the ground. This was in a rather open part of the woods perhaps fifty feet from the shore of the lake. Identification was for a time uncertain. But observations on six different occasions between June 7th and 18th of from one to two hours duration each time, were sufficient to remove all doubts. During this time the female was seen many times on the ground or in the low growth at a distance of ten feet or less, and the male with his characteristic markings was seen clearly in bushes or low trees at least five times within fifteen feet besides many times at greater distances and heights.

The female was not at all timid and apparently gathered most of her nesting material at two places, both within sixty feet of the nest tree. By taking a partly concealed post within a few feet of these places many excellent opportunities for observation were secured. Several times the female flew directly from the nest to the ground or brush passing within a few feet of the observer's head. While searching in the low growth she was absorbed in manner, giving only occasionally a sharp chip. In going to the nest her actions were more rapid and she chipped more frequently, generally alighting ten to twenty feet below the nest and working her way up from limb to limb on the outside of the tree. She was an industrious worker and during the period of nest building was found at work whenever this part of the woods was visited, both morning and afternoon.

The male was not seen to carry any nest material but seemed to be generally in the immediate neighborhood. At times he accompanied the female part way to or from the nest and sometimes remained near her in the low spruces. Once the female was attacked by a Junco and after a chase the Junco actually caught and held her. At this commotion the male Cape May flew down and lit close by but took no active part in the argument. The Junco was apparently victor for after one more flight to her nest the female Cape May was not again seen to trespass on the Junco's territory or do any more nest building that morning. The male

spent most of his time well up in the trees and seemed particularly fond of a large white birch. Among the small branches of this tree he was seen and heard many times. Once when a small hawk flew overhead a rapid chipper seemed to indicate the Cape May note of alarm or warning.

On June 11 the male was seen to chase the female. The next day nest building was apparently complete. An hour's watching on the 13 also failed to show any further nest construction, although the female was frequently heard in the low growth. Once she flew ten feet up in a spruce and gave a peculiar note at the same time lifting her tail. Immediately the male flew down and copulation took place. The whole proceeding resembled very much that of the Chipping Sparrow.

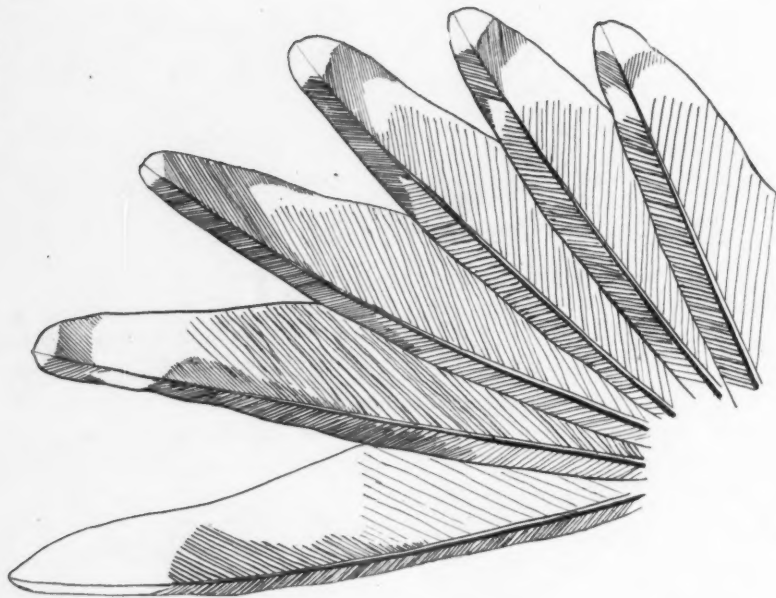
Neither male or female were seen again until June 18 at which date the set was judged to be complete. When the writer had climbed perhaps ten feet up in the nesting tree, the female flew off but soon returned to the nest. This was repeated once more before the nest was reached. The male was heard but not clearly seen.

The nest was placed about six feet from the top of the tree on a short branch nine inches from the trunk and an equal distance from the tip. From the ground it could not be seen even with field glasses. From a few feet below the nest was apparently a green ball of moss. Closer examination, however, showed it to be a neatly cupped nest resting on the branch and short twigs. To these it was not securely tied and was lifted intact from its position without difficulty.

The exterior of the nest was of green *Sphagnum* moss, interwoven with vine stems, and a very few twigs, bound lightly with plant down, small wads of which appeared here and there over the moss. The body of the nest consisted of fine grass stems. Within this was a lining of white hairs apparently from the rabbit, one small partridge feather and a few fine black rootlets. The nest was bulky but very neatly and fairly compactly put together. At the rim one side was very smoothly finished. This was probably the entrance side toward the tree trunk. It was an unusual and beautiful nest.

Dimensions: outside 4 " wide, $2\frac{1}{4}$ " deep.
inside $1\frac{3}{4}$ " " 1 " "

1880
1881
1882
1883
1884



TIPS OF OUTER PRIMARIES.

- 1 *Larus argentatus argentatus*, adult Male. J. Dwight No. 10777.
- 2 *Larus argentatus thayeri*, adult Male. M. C. Z. No. 40336.

The eggs, six in number, were a clear white with many spots and blotches of light reddish brown distributed over the surface, confluent at the large end to form a wreath. They were also characterized by a few light lavender marks and a few almost black lines and spots.

Average dimensions .698" \times .50".

The author is aware that the observations here recorded do not appear to harmonize well with the accounts of J. W. Banks and others of the nesting habits of the Cape May Warbler. It seems probable that this pair of birds were not typical in their choice of a nesting site. It is also probable that nest construction varies considerably in different localities as is often the case with other warblers. Notwithstanding these variations it is hoped that the details here given may be of service in the further study of this very interesting warbler.

THE STATUS OF "*LARUS THAYERI*, THAYER'S GULL."

BY JONATHAN DWIGHT, M. D.

Plate XV.

ABOUT two years ago a new Arctic Gull was described as "*Larus thayeri*" on the strength of a few birds obtained in Ellesmere Land (see Brooks, Bull. M. C. Z. LIX, No. 5, Sept. 1915, pp. 373-375). Recently, thanks to the courtesy of Mr. P. A. Taverner, of the Victoria Memorial Museum of the Canadian Geological Survey, I have had opportunity of comparing his fine series of Arctic Gulls with the type and others of *thayeri* loaned me by Mr. O. Bangs of the Museum of Comparative Zoölogy. Other specimens in the American Museum of Natural History and in my own collection bring the series examined up to twenty-five and these compared with a much larger series of the Herring Gull (*Larus argentatus*) demonstrate that the supposed new species is nothing more than a

geographical race of the Herring Gull and should stand as *Larus argentatus thayeri* — Thayer's Herring Gull.

Complete intergradation between the two forms occurs, *argentatus* prevailing south of Hudson Strait and of the northern shores of Hudson Bay, while northward probably throughout the Arctic archipelago of Canada, *thayeri* seems to be the common form.

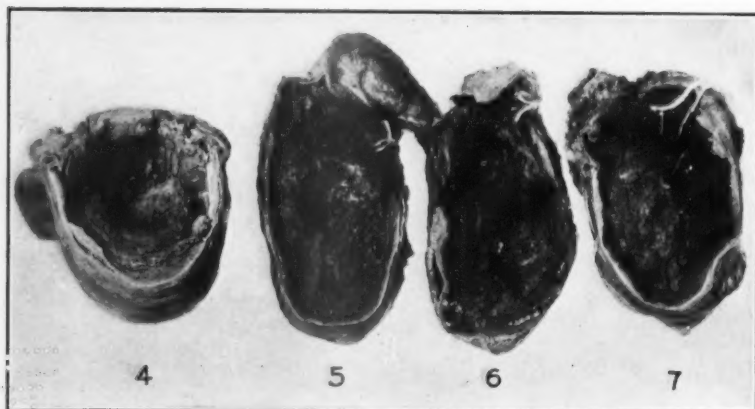
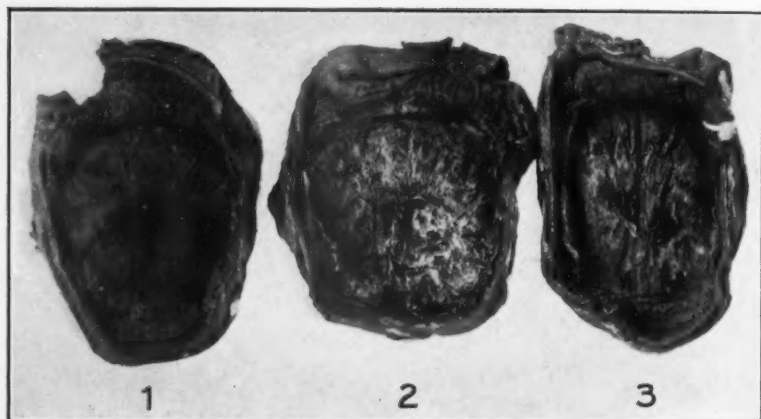
Breeding birds of Ft. Chimo, Ungava, are *argentatus*, and those of Cape Fullerton, north of Chesterfield Inlet not quite typical *thayeri* but farther north and west all the birds are *thayeri*. The localities from which I have seen breeding specimens are Buchanan Bay, Ellesmere Land, Browne Island (south of Cornwallis Island), Kater Point, Coronation Gulf, Bernard Harbor, Dolphin and Union Strait and Cape Kellett, Banks Island.

Thayer's Herring Gull probably winters chiefly on the Pacific Coast for I have examined a number of specimens from Barkley Sound, Departure Bay and Comox, Vancouver Island, British Columbia. I also have an adult female in my own collection taken on the north shore of the St. Lawrence at Tadousac, Quebec, July 26, but this specimen is doubtless a wanderer from the north for dissection showed it to be a bird past the breeding stage.

The plate (Plate XV) shows so well the chief character by which the two races may be distinguished that little need be said except that *thayeri* is a little smaller and is apt to have the primaries of a slatier black. Fig. 2 represents the wing pattern of the type of *thayeri* (M. C. Z. No. 40336, ♂ June 10, Ellesmere Land). Other specimens show a great diminution of white on the first and second primaries and a subterminal band of black on the first, while specimens of *argentatus* often have the first primary with a completely white tip.

The describer is further to be congratulated for discovering a gull with characters that create a strong suspicion as to the affinities of *Larus kumlieni*. If *thayeri* were crossed with *Larus leucopterus* we would expect just such a series of hybrid specimens as now are placed under the name *kumlieni*, but this is a matter for future consideration.

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STOMACH LINING OF DUCKS.
1-4 MALLARD, 5 AND 7 BLACK DUCK,
6 REDHEAD.

THE SHEDDING OF THE STOMACH LINING BY BIRDS,
PARTICULARLY AS EXEMPLIFIED BY
THE ANATIDÆ.

BY W. L. MCATEE.

Plates XVI-XVII.

At the beginning of this discussion, it is well to make sure that all understand the true nature of the stomach lining of birds. Besides the innermost lining with which we are now especially concerned, the stomach wall in birds consists of three layers: the external serous or connective tissue coat, the middle muscular layer, which varies greatly in development, in the different groups and the inner glandular or mucous coat. In section, as viewed through the microscope, the mucous coat is seen to consist chiefly of innumerable long slender villi. It is among these that the material is secreted that forms the innermost or fourth coat of the stomach. This lining is of a horny but somewhat flexible consistency. It strips rather easily from the mucous coat, and when freshly pulled off its inner surface has a furry appearance. When examined under the microscope the filaments giving it this appearance are seen to continue into the mucous coat. This interdigitation must aid greatly in holding the corneous lining in place, during the digestive process, which is a strenuous one, particularly in birds with highly developed grinding gizzards, as the Anatidæ.

To emphasize the intensity of the grinding process in which the stomach lining takes part, it may be well to give an idea of the power exerted by the gizzards of birds. De Reaumur found that small tin cylinders fed to turkeys were crushed by the gizzard in a short time; and pellets of shot in gizzards often are greatly flattened. Wild ducks habitually feed on such things as acorns and hickory nuts and have no difficulty in grinding them up. In fact, according to the writer's experience, bitter pecans which have a thick hard shell are cracked as they enter the gizzard, and before they can possibly have been exposed to the maximum pressure. Many species of ducks feed upon thick-shelled mollusks,

which they must of course swallow whole and grind up in their gizzards. Such species as the Scoters and Greater Scaup thus easily dispose of oysters.

It is evident that a mass of fragments of such shellfish, or even some softer food, interspersed with often sharply angular gravel, and subjected to grinding by the tremendous muscular power indicated, must have a powerful abrading effect upon the lining of the gizzard. Nothing is more natural to suppose, therefore, than that the lining wears out and must be replaced.

The stomach lining when fresh covers the whole interior of the organ, being thin about the openings into the stomach and on those parts of the wall between the great muscle masses. On the inner face of each main muscle-body, however, the lining is greatly thickened. This part of the lining is hereafter referred to by the term, pad. Each pad has a somewhat crescent-shaped, very firm grinding ridge which is opposed to the ridgeless end of its fellow pad.

The movements of the gizzard during trituration are such as to give the food mass a rotary motion. This we know from the arrangement of the longer particles in food taken from bird stomachs and from the appearance of the caterpillar hairs which remain sticking in the lining of cuckoo stomachs. The arrangement of these resembles that of the fibers on the top of a well-brushed silk hat.

The rotary movement of the gizzard contents, together with the presentation of the hard thick grinding ridge of one pad against the thinner, less durable portion of the pad on the other side, results in wear first becoming apparent on these thinner ends of the pads (Fig. 1). A little such wear reveals the fact that the pads have a stratified structure and the gradual approach of the ends of the strata toward the middle of the pad indicates the progress of the wear (Figs. 2 and 10). It may be that such wear is compensated for, at least in part, by addition to the pads from below, but eventually they become unserviceable and must be shed.

Often the wear takes the form of a rolling up of the ends of the pads, which are thus subjected to much greater stress (Figs. 8 and 9). Furthermore, in such case, food and grinding material getting under the pad tend to force it away from the mucous coat.

Wear is manifested also by the lining becoming longitudinally grooved, and by strips or broader fragments being gouged out (Figs. 3 to 7). In some cases the broken surface of the pad together with the shredded portions remaining in position, have a distinctly pathologic appearance, and make it hard to realize that one observes but a stage in a normal and periodically recurring process.

Apparently after the lining has reached a certain degree of wear, general shedding occurs. Then, all the thinner portions of the lining usually come off as well as the thick central pads. Rarely a bit of the old lining may cling, and if a piece of one of the pads, it stands out prominently from the new smooth surface. Such pieces gradually wear away from the new lining which bears them. Finding fragments of stomach lining among the food is by far the most common evidence of the shedding. No fewer than 5 large and 20 small pieces of lining have been found in a single stomach. It is certain that the normal process in the Anatidæ is, that the worn stomach lining is shed off, ground up, and passed out of the body through the intestines. Cases of the regurgitation of the lining are what are chiefly recorded in the literature, but in Anatidæ, regurgitation seems practically impossible.

When the central pads and other parts of the stomach lining are freshly shed off, the surface below is not always a new grinding surface, but may be the soft mucous coat itself. This is known by the fact that objects in the gizzard become imbedded in it, something that never happens (except in case of sharp bones, etc.) when the horny lining is concerned. Stomachs in this stage are empty or nearly so, and it is probable that there is a pause in digestive action until a new lining is formed. A useful incidental result of shedding the lining is that the bird gets rid of the parasitic worms (Nematodes) that frequently lie half beneath, half above the lining.

As to the frequency with which evidences of wear are observed, I may say that in a collection of 30 stomachs of ducks from Minot, Mass., 4, or 13% showed marked wear; the proportion in another lot of 67 from Wenham, Mass., was 24%. I have noted severe wear or some stage of the actual shedding process in about 100 gizzards of the common Mallard, 66 of the Lesser Scaup, 28 of the

Black Duck, etc. The number of species of ducks and geese in which the process has been observed is 24 and includes the following:

Merganser, Mallard, Black Duck, Florida Duck, Gadwall, Baldpate, Green-winged Teal, Blue-winged Teal, Shoveller, Pintail, Wood Duck, Redhead, Canvasback, Greater and Lesser Scaups, Ring-necked Duck, Goldeneye, Bufflehead, White-winged Scoter, Surf Scoter, Ruddy Duck, Blue Goose, Ross's Goose and Canada Goose.

In connection with the last named species it is interesting to note that Audubon described (though unwittingly) a case of the shedding of the stomach lining. He says:¹ "The epithelium forms two transversely elliptical, concave grinding surfaces, of great density (but it is altogether wanting on the rest of the inner surface, although this may have happened after death)." It is not surprising that the last thought occurred to him, as an explanation of the case, for things certainly do not look right inside a shedding gizzard. However, there is little doubt that that was just what he examined. A comparable case is shown in Fig. 11.

Birds other than Anatidæ for which we have found evidence of shedding the stomach lining are discussed by species, which number 11:

Royal Tern (*Sterna maxima*), Amelia Id., Fla., Nov. 26, 1906.—

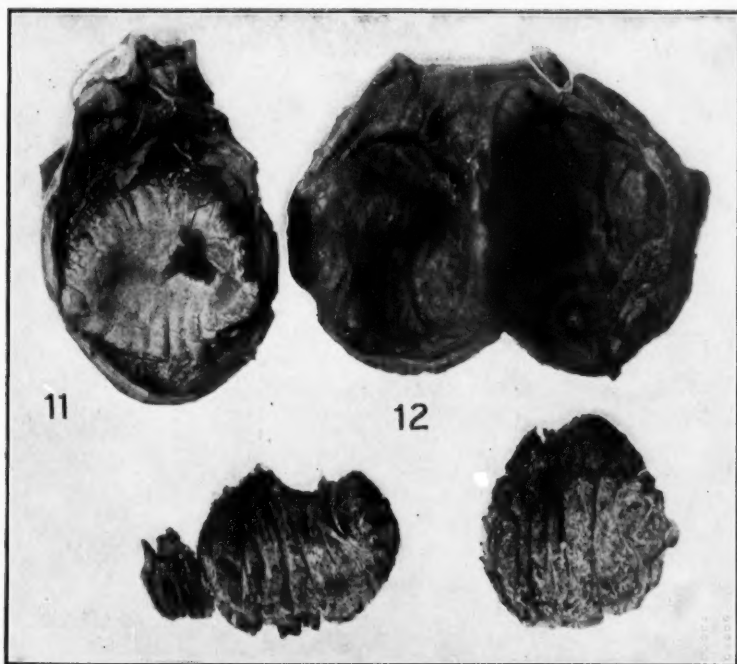
A large crescentic fold of the lining has been pushed away from the mucosa near œsophageal orifice, evidently by incoming food. If the bird had lived, there is little doubt that the entire lining would soon have sloughed off.

Black-necked Stilt (*Himantopus mexicanus*), St. Joseph Id., Tex., Aug. 14, 1905.—Stomach contained a shed lining in fragments, and the functional lining was cracked and separating readily, leaving a hard layer beneath.

Long-billed Dowitcher (*Macrorhamphus griseus scolopaceus*), Aransas Bay, Texas, August 14, 1905.—Lining entirely free from stomach wall, complete but broken into two pieces; next layer hard.

Bobwhite (*Colinus virginianus* subsp.), Gurley, Texas, July 19, 1905.—Entire lining very loose, with particles of food behind it on one side; next lining hard. Apparently this lining would have soon separated as a whole.

¹ Orn. Biogr. 5, 1849, p. 609.



STOMACH LINING OF DUCKS AND GEESSE.
8-9 MALLARD, 10 AND 12 GREATER SCAUP,
11 ROSS'S GOOSE.

1000
1000
1000
1000
1000

Sparrow Hawk (*Falco sparverius sparverius*), Navasota, Texas, October 11, 1905.

Yellow-billed Cuckoo (*Coccyzus americanus americanus*).— Have seen seven instances of shedding of lining in this species; six of them were in a lot of eleven stomachs.

Black-billed Cuckoo (*Coccyzus erythrophthalmus*).— In a lot of 6 stomachs heavily lined with caterpillar hairs, the lining of 5 was cracked and peeling off. It has been noticed that among cuckoos taken at the same place and time, some have the stomach lining furred with caterpillar hairs, while others lack them. The explanation of this may be frequent shedding of stomach linings.

Magpie (*Pica pica hudsonia*), Farmington, Utah, May 7, 1912.— Numerous pieces of old lining free in stomach, the largest tightly rolled up by muscular action of gizzard; new lining perfect.

Fish Crow (*Corvus ossifragus*) Norfolk, Va., December 20, 1890.

Southern Meadowlark (*Sturnella magna argutula*) Turtle Bayou, Texas, September 22, 1897.— Complete old lining somewhat worn and cracked, almost wholly separated from new lining, but still in position.

California Thrasher (*Toxostoma redivivum*) Watsonville, Calif., August 31, 1903.— This stomach shows a peculiar malformation — an inwardly projecting lobe. The lining had been molded over this of course, and the fact that the lining was shedding is shown by this hollow flap having sloughed off and its inner surfaces cohering.

Mockingbird (*Mimus polyglottos polyglottos*).— Five cases of shedding or incipient shedding noted.

Hermit Thrush (*Hylocichla guttata* subsp.) Allen's Park, Colo., September 28, 1905.

These species are scattered through the groups of birds in a way to suggest, that cases of the shedding of the stomach lining may eventually be observed in almost any species.

CONCLUSIONS.

A number of instances have been recorded in ornithological literature (see bibliography) of stomach linings being shed and regurgitated. This, of course, is the only form of the phenomenon

observable in living birds, and appears, except in the case of the hornbills, to be of *unusual* occurrence. Observations made during the course of stomach examinations, however, make it certain that the gradual wearing down, shedding off, and grinding up of the lining is much more frequent. Among the birds which have strongly muscular gizzards, shedding of the stomach lining, probably occurs more or less regularly and is necessary to maintain the efficiency of the food-triturating process.

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Details of the structure.

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Notes on this subject, under Hornbill, p. 437, and under Stomach,

p. 918. On the latter page, casting the stomach lining from the mouth is recorded for *Pastor roseus*, *Sturnus vulgaris*, *Turdus visivorus*, *Carine noctua*, *Cuculus canorus* and *Buceros*.

SMITH, H. H.

Note on the ejection of the lining membrane of the gizzard by the curlew. *British Birds*, VI, No. 11, April 1, 1913, pp. 334-336.

The note refers to *Numenius arquata*; the observer, Mr. Dugald Macintyre states that curlews periodically eject the lining membrane, still retaining the grit used in digestion.

EXPLANATION OF PLATES.

PLATE XVI.

- FIG. 1. Lining showing slight wear, at ends of pads (Mallard).
- FIG. 2. Pad much worn at ends, inner strata much shortened (Mallard).
- FIG. 3. Pad longitudinally grooved, with shreds peeling off (Mallard).
- FIG. 4. Large fragment broken out of pad (Mallard).
- FIG. 5. Same (Black Duck).
- FIG. 6. Pad split lengthwise, shredded and separating from mucosa (Redhead).
- FIG. 7. Fragment of pad in course of breaking out; it is doubled and stands up from general surface at upper right center (Black Duck).

PLATE XVII.

- FIG. 8. Pad curling up at lower end (Mallard).
- FIG. 9. A more advanced stage of same process, whole pad nearly separated (Mallard).
- FIG. 10. Extreme wear, lower third and upper fourth of pad worn off, remainder sloughing off (Greater Scaup).
- FIG. 11. Lining all gone except heavy central pad, this ready to shed (Ross's Goose).
- FIG. 12. Lining completely shed, mucosa bare, the two pads much worn but almost entire were loose in the stomach (Greater Scaup).

NOTES ON THE KENNICOTT'S SCREECH OWL (*OTUS*
ASIO KENNICOTTI) IN THE PUGET SOUND REGION.

BY J. HOOPER BOWLES.

THE following notes, unless otherwise specified, are taken entirely from the vicinity of Tacoma, Washington, which is situated on Puget Sound at the head of Commencement Bay. This region, together with the vicinity of the fresh water lakes, rivers and marshes of the surrounding country, furnish many attractions for this subspecies, which at the best is by no means common in any part of its range. There seems no apparent reason why it should not be as abundant as the owls of this genus that are found in New England or California, with both of which I am very familiar, but such is far from being the case. The most favored localities are in the immediate vicinity of water, either fresh or salt, where the country is to some extent open. Deciduous timber seems to be given a slight preference over the fir woods, as a rule, though during the day the birds are usually found hiding amongst the dark foliage of some young fir.

It is a resident throughout the year, and is probably no more abundant at one season than another, although it is much more often heard calling during the fall than at any other time.

The size of the birds in this vicinity is a matter of considerable interest to me when I compare them with the measurements of this form as given in the books. These would seem to indicate that a length of ten inches or more might be expected, but my experience has been that such is never the case. Specimens that I have had in my collection measured, before skinning, from 8.80 inches to 9.25 inches in length, the average being about 9.04 inches, and I believe that I can confidently assert that I have never seen one ten inches long. I do not for a moment wish to suggest the probability of a new race, although one cannot help recalling the formerly described Puget Sound Screech Owl in this connection, but it would seem of interest to indicate the size of the birds from this section of Puget Sound. Unlike a majority of the other *Raptores* the females are frequently smaller in size than the males,

neither sex appearing to have any regular advantage in this respect. As this article is intended to describe the habits of the birds, rather than to enter into technicalities regarding size and plumage, I will state briefly that we do not have two distinct color phases such as are found in the bird of the eastern states. Broadly speaking, our bird is brownish on the upper parts, heavily streaked with darker brown on the lower parts. Some specimens are slightly more grayish than others, especially on the lower parts, but there is surprisingly little variation to be found among them.

My experience has been that the nests are very rarely found, as in twenty years collecting I have seen only five sets of their eggs from this section. Three nests containing young have also been examined, although I have spared no pains in trying to locate their home sites. The eggs are almost invariably deposited in natural hollows in trees, the only exceptions being extra big holes made by the Northwestern Flicker (*Colaptes cafer saturation*). One of these two cases was a hole that had been excavated to a depth of only about six inches, in a lone dead fir stub that stood in a vacant lot in the city. A most unusual nesting site in every way for these owls, as the cavities used are most often two or three feet in depth and situated in well wooded localities. The nests that I have seen were placed from four to twelve feet above the ground, but it is impossible to say what the average height may be in this country where trees two hundred feet tall are the rule rather than the exception. No lining is used in the nests, unless this term might be applied to a goodly supply of feathers belonging to the Steller's Jay, Northwestern Flicker, etc., which gradually accumulate as incubation advances.

The nesting season commences in April and it is probable that the 15th might be set as an average date for fresh eggs. However, as is the custom with nearly all of our northwestern birds, the date for first layings is subject to great variation. One pair, from which I took a set of three eggs each season for two years, laid their eggs during the first week of May, but I believe this to be an unusually late date for this bird. I think that complete sets will usually be found to contain three eggs, although two are nearly as often the full number. In only one instance have I seen as many as four. In color they are pure white and some-

what glossy, with more or less nest stain according to the state of incubation. They are usually nearly spherical in shape, like the eggs of most owls, but occasionally there is a slightly elliptical tendency. The size is, perhaps, greater than any of the eggs of the other Screech Owls, and they are a source of never failing surprise to me when I compare them with the sitting bird which looks puny beside them. The average measurements of eggs from this locality is 1.59×1.31 inches, the extremes being 1.48×1.27 inches in the above mentioned set of two eggs, and 1.65×1.35 inches in the set of four. It will doubtless be a matter of interest to give the measurements of a complete set of two eggs taken at Victoria, B. C., by Mr. Walter F. Burton of that city. These measured 1.42×1.26 and 1.42×1.24 inches, but I am unable to say how nearly typical they may be for eggs from that locality.

In regard to their powers of sight it is my opinion that their sight is not very greatly impaired by daylight unless there is unusually bright sunshine. If the eggs are incubated to some extent the sitting bird may be taken from the nest and handled at will, but it is doubtful if the light has much if any dazing effect as has been suggested. They appear just as inactive if they are not taken out of the hole, permitting the eggs to be removed from beneath them without remonstrance and with very little movement. The only set of fresh eggs that I have ever seen were in a nest found by Mr. E. A. Kitchin, of Tacoma, and in this instance the actions of the sitting bird were entirely different. Upon putting my arm into the cavity it was greeted by a rapid snapping of the beak and fluttering of wings. As we had no idea what might be in the hole my arm was very promptly withdrawn, being at once followed by the owl itself. She sat in the entrance for a moment looking at us in an extremely hostile fashion and then darted swiftly out of sight through the trees, seeming to see perfectly well where she was going. Another time I was attempting to "squeak" up some small birds in a thicket when one of these owls flew up and perched on a limb within three feet of my head. I remained perfectly motionless and the bird stared hard at me for a while and then looked rapidly around in all directions. The body was bent forward and the ear tufts laid back, making as menacing and

wicked looking a little face as one might wish to see, and there is very little doubt that any wandering mouse would have been seen and snapped up at the first movement. In this connection it is curious that in many instances neither birds of prey nor wild animals seem to recognize a human being when they are drawn up by this "squeaking" process. I have had a red fox come up to within ten feet of me when I was sitting in plain sight without making out my identity in the least. It looked me over carefully seeming to examine me inch by inch, and then watched the ground with ears pricked forward and every sense apparently on the alert. The probability is, I believe, that they are expecting some small object like a mouse, consequently so large a body as a human being passes unnoticed. This is only natural, for we humans are liable to much the same error. It is doubtful, for instance, if there are many oölogists who, in a careful search among the trees for some warbler or creeper nest, have not once or twice passed over the nest of some hawk or crow that was in perfectly plain sight. It has happened to me more than once, the large nests being found afterwards. In both animal, bird, and man the eyes are focussed for the smaller object, the larger one being seen but not comprehended because unlooked for.

The variety of food eaten by these owls has formed a most interesting study, the results of which it seems justifiable to give in considerable detail. A great majority of the stomachs that I have examined were from birds taken during the fall and winter months, the contents being for the most part the remains of mice of different kinds. One interesting exception is that of a male given me by Mr. Stanton Warburton, Jr., of Tacoma. This bird was taken on January 6, 1917, at which time the thermometer was somewhat above freezing with no snow on the ground. The stomach contained eleven cut-worms, two centipedes, one mole cricket, one good sized beetle, and other insect remains. With all this on the credit side of their ledger, these owls are at times subject to some most astounding falls from grace. The fact does not reflect very greatly to their credit that nests containing incubated eggs or young are usually well sprinkled with the feathers of smaller birds. However, this might be more or less natural if rodents and other small animals were scarce, but the following

incidents seem beyond all comprehension. One friend told me that he heard an outcry among the ducks in his yard one night and, upon going out with a lantern, "found a Screech Owl riding around on the back of one of the big ducks, hanging onto its neck." This may seem no more than odd, but another friend, Dr. G. D. Shaver, of Tacoma, had his faith in these little owls completely shattered. A pair came and nested on his place within a short distance of his pens of gamebirds and fancy bantams, and, as the entrance of the nest was only four feet from the ground, the doctor took great pleasure in watching the sitting bird and her family as they grew up. One morning during the winter of 1914-1915, which was a very mild season, he was nearly overcome upon visiting his yards to find two dead Golden Pheasants, four dead Ring-necked Pheasants, and one Ring-neck cock so badly hurt that it died a few days later. All were, of course, grown birds at that time of the year. The injuries were nearly all gashes and rips in the head and neck, so the blame was laid to rats although none were ever seen or caught there. However, the pens were completely enclosed in two inch mesh hen-wire netting and nothing of the kind happened again that winter, the owls nesting in their regular homestead the following spring. The winter of 1915-1916 was the most severe that Tacoma has experienced in twenty years, and one morning the doctor found a screech owl in his quail pen, in the snow, and close by the neatly plucked body of a Varied Thrush. This aroused his suspicions so he killed the owl, not wishing to take any chances of losing his quail. Incidentally it was interesting to find that a bird as large as the owl could enter through a two inch wire mesh. On the morning of February 4, 1916, the doctor visited his yards and found a scene of murder similar to that of the previous year. In one pen were four of his prize Buff Cochins Bantams mangled and dead, some being in their house and others out in their yard, while in another pen were two fine cock Golden Pheasants in a similar condition. The wounds were similar in location and character to those made on the birds killed about a year before, but this time part of the head of one of the bantams had been eaten. There was no indication whatever of what had caused the damage, nor of how any predatory creature could have entered, so the doctor put a liberal dose of strychnine

into the body of the partly eaten bantam and replaced it in the same spot where he found it. Next morning the seemingly impossible was made a practical certainty, for he found the body of a screech owl with the claws of one foot firmly imbedded in the body of the bantam. He very kindly presented me with the owl which, upon dissection, proved to be a female, its stomach containing a very considerable amount of bantam flesh and feathers, together with a great deal of wheat. (It seems probable that the wheat was accidentally swallowed with the crop of the bantam during the feast, but there was so much that it seems strange the owl did not discard it while eating). How a bird only 9.12 inches in length could have dealt out such havoc in so short a time is almost incredible, but, although purely circumstantial, the evidence against the owl appeared altogether too strong for even a reasonable doubt. The doctor and I wished to make as certain as possible, however, so the poisoned bantam was replaced and left for several days, but without any further results. For the above mentioned reasons I am rather doubtful as to the net value of this owl from an economic standpoint, although birds in a wild state would not give them such opportunities for such wanton killing as birds enclosed in pens.

THE NICHE-RELATIONSHIPS OF THE CALIFORNIA THRASHER.¹

BY JOSEPH GRINNELL.

THE California Thrasher (*Toxostoma redivivum*) is one of the several distinct bird types which characterize the so-called "Californian Fauna." Its range is notably restricted, even more so than that of the Wren-Tit. Only at the south does the California Thrasher occur beyond the limits of the state of California, and in that direction only as far as the San Pedro Martir Mountains and

¹ Contribution from the Museum of Vertebrate Zoölogy of the University of California.

San Quintin, not more than one hundred and sixty miles below the Mexican line in Lower California.

An explanation of this restricted distribution is probably to be found in the close adjustment of the bird in various physiological and psychological respects to a narrow range of environmental conditions. The nature of these critical conditions is to be learned through an examination of the bird's habitat. It is desirable to make such examination at as many points in the general range of the species as possible with the object of determining the elements common to all these points, and of these the ones not in evidence beyond the limits of the bird's range. The following statements in this regard are summarized from the writer's personal experience combined with all the pertinent information afforded in literature.

The distribution of the California Thrasher as regards life-zone is unmistakable. Both as observed locally and over its entire range the species shows close adherence to the Upper Sonoran division of the Austral zone. Especially upwards, is it always sharply defined. For example, in approaching the sea-coast north of San Francisco Bay, in Sonoma County, where the vegetation is pre-vaillingly Transition, thrashers are found only in the Sonoran "islands," namely southerly-facing hill slopes, where the maximum insolation manifests its effects in a distinctive chaparral containing such lower zone plants as *Adenostoma*. Again, around Monterey, to find thrashers one must seek the warm hill-slopes back from the coastal belt of conifers. Everywhere I have been, the thrashers seem to be very particular not to venture even a few rods into Transition, whether the latter consist of conifers or of high-zone species of manzanita and deer brush, though the latter growth resembles closely in density and general appearance the Upper Sonoran chaparral adjacent.

While sharply delimited, as an invariable rule, at the upper edge of Upper Sonoran, the California Thrasher is not so closely restricted at the *lower* edge of this zone. Locally, individuals occur, and numbers may do so where associational factors favor, down well into Lower Sonoran. Instances of this are particularly numerous in the San Diegan district; for example, in the Lower Sonoran "washes" at the mouths of the canyons along the south base of the San Gabriel Mountains, as near San Fernando, Pasadena, and

Azusa. A noticeable thing in this connection, however, is that, on the desert slopes of the mountains, where *Toxostoma lecontei* occurs on the desert floor as an associational homologue of *T. redivivum* in the Lower Sonoran zone, the latter "stays put" far

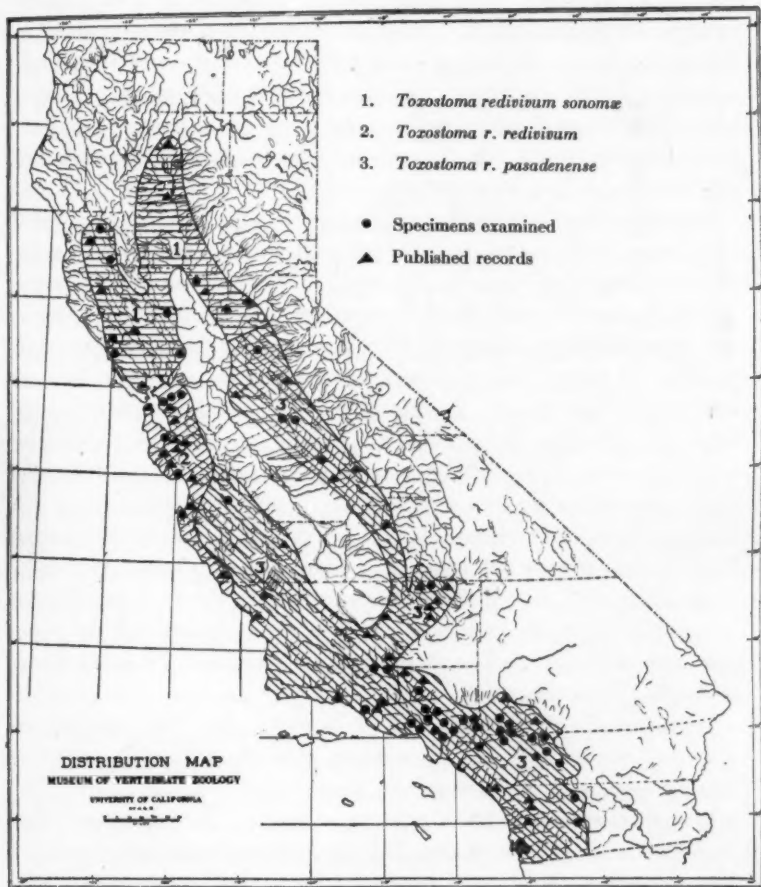


Figure 1.

more closely; that is, it strays but little or not at all below the typical confines of its own zone, namely *Upper Sonoran*. The writer's field work in the vicinity of Walker Pass, Kern County,

provides good illustrations of this. A tongue or belt of Lower Sonoran extends from the Mohave Desert over the low axial mountain ridge at the head of Kelso Creek and thence down along the valley of the South Fork of the Kern River nearly to Isabella. Leconte's Thrasher is a conspicuous element in this Lower Sonoran invasion, but no California Thrashers were met with in this region below the belt of good Upper Sonoran on the flanking mountain sides, as marked by the presence of digger pine, blue oak, sumach, silk-tassel bush, and other good zone-plants. Similar zonal relationships are on record from San Gorgonio Pass, Riverside County, as well as elsewhere.

Reference now to the general range of the bird under consideration (see p. 429), as compared with a life-zone map of California (Pacific Coast Avifauna No. 11, Pls. I, II), will show to a remarkable degree how closely the former coincides with the Upper Sonoran zone. The thrasher is, to be sure, one of the elements upon the presence of which this zone was marked on the map; but it was only one of many, both plant and animal; and it is concordance with the aggregate that is significant. Diagnosis of zonation similarly is possible in scores of places where change in altitude (which as a rule means change in temperature) is the obvious factor, as up the west flank of the Sierra Nevada, or the north wall of the South Fork valley, already referred to, in Kern County, or on the north wall of the San Jacinto Mountains. The California Thrasher is unquestionably delimited in its range in ultimate analysis by temperature conditions. The isothermic area it occupies is in zonal parlance, Upper Sonoran.

The second order of restriction is faunal, using this term in its narrowed sense, indicating dependence upon atmospheric humidity. The California Thrasher does not range interiorly into excessively arid country, although the Upper Sonoran zone may, as around the southern end of the Sierra Nevada, continue uninterruptedly towards the interior in a generally latitudinal direction. This is true where extensive areas are considered, but locally, as with zones, individuals or descent-lines may have invaded short distances beyond the normally preferred conditions. An example of this situation is to be found on the north and west slopes of the San Jacinto Mountains, where California Thrashers range around

onto arid chaparral slopes, intermingling with such arid Upper Sonoran birds as Scott's Oriole and the Gray Vireo. It is questionable, however, as to what extent faunal restriction really operates in this case; for reference to the zone map, again, shows that a vast tract of Lower Sonoran, lying to the east of the desert divides, extends continuously north to the head of Owens Valley. Really the only unbroken bridge of Upper Sonoran towards the east from the west-Sierran habitat of *Toxostoma redivivum* is around the southern end of the Sierra Nevada — a very narrow and long route of possible emigration, with consequent factors unfavorable to invasion, irrespective of either temperature or humidity, such as interrupted associational requirements and small aggregate area. In this particular bird, therefore, faunal restriction may be of minor importance, as compared with zonal and associational controls.

That faunal conditions have had their influence on the species, however, is shown by the fact of geographic variation within its range. The thrasher throughout its habitat-as-a-whole, is subjected to different degrees of humidity. Amount of rainfall is, in a general way, an index of atmospheric humidity, though not without conspicuous exceptions. Comparing the map of the ranges of the subspecies of *T. redivivum* (p. 429) with a climatic map of the State, direct concordance is observed between areas of stated rainfall on the latter and the ranges of the respective subspecies. It will be seen that the race *T. r. pasadenense* occupies an area of relatively low humidity, the race *T. r. sonomæ* of higher humidity and the race *T. r. redivivum* of highest humidity, in fact a portion of California's fog-belt. The distinctive color-tones developed are, respectively, of gray, slate and brown casts. In the thrasher, therefore, we may look to faunal influences as having most to do with differentiation within the species. In this case it is the faunal variation over the occupied country which is apparently responsible for the intra-specific budding, or, in other words, the origination of new specific divarications.

Wherever it occurs, and in whichever of the three subspecies it is represented, the California Thrasher evinces strong associational predilections. It is a characteristic element in California's famous chaparral belt. Where this belt is broadest and best developed, as in the San Diegan district and in the foothill regions bordering

the great interior valleys, there the Thrasher abounds. The writer's personal field acquaintance with this bird gives basis for the following analysis of habitat relations.

The California Thrasher is a habitual forager beneath dense and continuous cover. Furthermore, probably two-thirds of its foraging is done on the ground. In seeking food above ground, as when patronizing cascara bushes, the thrasher rarely mounts to an exposed position, but only goes as high as is essential to securing the coveted fruits. The bird may be characterized as semi-terrestrial, but always dependent upon vegetational cover; and this cover must be of the chaparral type, open next to the ground, with strongly interlacing branch-work and evergreen leafy canopy close above — not forest under-growth, or close-set, upright stems as in new-growth willow, or matted leafage as in rank-growing annual herbage.

The Thrasher is relatively omnivorous in its diet. Beal (Biological Survey Bulletin no. 30, p. 55) examined 82 stomachs of *Toxostoma redivivum* and found that 59 percent of the food was of a vegetable nature and 41 animal. A large part of this food consisted of ground-beetles, ants, and seeds, such as are undoubtedly obtained by working over the litter beneath chaparral. The bird's most conspicuous structural feature, the long curved bill, is used to whisk aside the litter, and also to dig, pick-fashion, into soft earth where insects lie concealed. Ground much frequented by Thrashers shows numerous little pits in the soil surface, less than an inch deep, steep on one side and with a little heap of earth piled up on the opposite side. As already intimated, the Thrasher at times ascends to the foliage above, for fruit and doubtless some insects. Much in the way of berries and seeds may also be recovered from the ground in what is evidently the Thrasher's own specialized method of food-getting. Even granting this specialization, I do not see why the chaparral, alone, should afford the exclusive forage-ground; for the same mode of food-getting ought to be just as useful on the forest floor, or even on the meadow. The further fact, of widely omnivorous diet, leads one to conclude that it is *not* any peculiarity of food-source, or way of getting at it, that alone limits the Thrasher associationally. We must look farther.

The amateur observer, or collector of specimens, is struck by the

apparent "shyness" of the Thrasher — by the ease with which it eludes close observation, or, if thoroughly alarmed, escapes detection altogether. For this protective effect the bird is dependent upon appropriate cover, the chaparral, and upon its ability to co-operate in making use of this cover. The Thrasher has strong feet and legs, and muscular thighs, an equipment which betokens powers of running; the tail is conspicuously long, as in many running birds; and correlatively the wings are short, rounded, and soft-feathered, indicating little use of the flight function. The colors of the bird are non-conspicuous — blended, dark and light browns. The nests of the Thrasher are located in dense masses of foliage, from two to six feet above the ground, in bushes which are usually a part of its typical chaparral habitat. In only exceptional cases is the chosen nesting site located in a bush or scrubby tree, isolated more or less from the main body of the chaparral.

These various circumstances, which emphasize dependence upon cover, and adaptation in physical structure and temperament thereto, go to demonstrate the nature of the ultimate associational niche occupied by the California Thrasher. This is one of the minor niches which with their occupants all together make up the chaparral association. It is, of course, axiomatic that no two species regularly established in a single fauna have precisely the same niche relationships.

As a final statement with regard to the California Thrasher, we may conclude, then, that its range is determined by a narrow phase of conditions obtaining in the Chaparral association, within the California fauna, and within the Upper Sonoran life-zone.

NOTES ON LONG ISLAND BIRDS.

BY JOHN T. NICHOLS, ROBERT C. MURPHY AND LUDLOW GRISCOM.

THERE is much interest to be obtained from thorough study of the birds of any one region, especially when such study is prolonged over a period of years and comprises the results of numerous observers.

From various and diverse lines of endeavor we always return to a consideration of the avifauna of Long Island, New York, with unabated enthusiasm.

An obvious line of inquiry in this connection is to determine the dates between which the various migratory species are found on the island. Such dates may be of two kinds, those of normal or average occurrence, and extreme dates. Though perhaps of less importance the latter are the more tangible. In determining normal dates it is remarkable with what facility any one observer in any one year may overlook certain species. Satisfactory migration dates cannot well be obtained simply by collecting. A vast number of birds would have to be killed to get anything like good results by this method alone.

The tables in Eaton's 'Birds of New York,' 1909, furnish a valuable statement of extreme migration dates on Long Island, but the status of the various species is naturally enough not discussed in any great detail. Braislin's annotated list (1907), though easier to refer to, is less complete and therefore unsatisfactory in this respect. For present knowledge of migration dates on Long Island, ornithologists are as much indebted to the records and compilations of Mr. William Dutcher as of all other observers taken together.

Long Island has always been considered as a whole. In our opinion there are advantages in treating it otherwise. The waterfowl especially are notably different in their occurrence and numbers at the eastern and western ends of the island. The earliest fall migrants are almost invariably recorded at the eastern end of the island, and many waterbirds linger there much later than at the western end. At first sight this may appear only natural as the

migration route follows the coast-line, roughly speaking. With many of the waterbirds, however, this is not the case. Too many species arrive in spring at the eastern end of the island either before they are recorded at the western end, or in the case of the rarer species they are not recorded at all at the western end. It is accordingly our belief that the majority of the water-birds never see the western end of Long Island, but fly across the ocean to the New Jersey coast. In this connection it is interesting to note that waterbirds are apparently much more numerous on the southern half of the Jersey coast than the northern, indicating possibly more exactly the route taken. Undoubtedly civilization and its attendant evils from the bird's point of view have done much to bring this state of affairs about.

The land birds also furnish interesting corroborative evidence. The outer beaches of the south shore are a favorite migration route with them, and any type of land bird is apt to be found in the bay-berries or in the beach grass. Land birds are abundant in the migrations on Fire Island Beach, common on Jones Beach, noticeably less so on Long Beach, and their numbers are insignificant at Rockaway Beach which furnishes much better country for them than Long Beach. During the trips to and from Europe that one of the authors has made during the migrations, land birds have invariably boarded the vessel off Long Island, as far west as Long Beach, but never farther west. There seems then to be excellent evidence to indicate an over sea flight on the part of the land birds as well. Still further evidence is supplied by the study of the records of accidental or casual southern species. It is well known that such wanderers attach themselves to bands of migrants for the sake of company. The great majority of such species recorded for Long Island have been taken at the eastern end of the island.

In the second place, Long Island is sharply divided geologically into a northern and southern half by the terminal moraine. The flora of the two sections is pronouncedly different, and the avifauna is slightly so — about as much difference as there is between the Piedmont and the coastal plain regions of New Jersey. Due to the formation of the coast, the waterfowl are much less abundant on the north shore.

To recapitulate:

1. Birds much commoner at the eastern end of the island than the western: Three Grebes, the Red-throated Loon, the Alcidae, the Jaegers, the Glaucous Gull, Laughing Gull, the Terns, the Shearwaters, Leach's Petrel, most of the Anseres, the Cormorants, the Bittern, Coot, Phalaropes, Dowitcher, Stilt Sandpiper, Knot, Purple Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, Golden Plover, Rough-legged Hawk, Bald Eagle, Duck Hawk, Fish Hawk, Short-eared Owl, Snowy Owl, Snow Bunting, Lapland Longspur, Cliff Swallow.

2. The following water-birds are equally common at both ends of the island: Loon, Kittiwake, Gannet, Red-breasted Merganser, Black Duck, Scaup Duck, Old-squaw, White-winged and American Scoters, Canada Goose, Brant, Herons, the commonest shore-birds.

3. The following are commoner at the western end: Great Black-backed, Herring, Ring-billed and Bonaparte's Gulls, Clapper Rail, Sora, Florida Gallinule, Orchard Oriole, Seaside Sparrow. From this list are excluded several of the rarer land-bird migrants, the greater number of records from the western end of the island being due to the greater number of observers.

4. Species which have increased in numbers at the western end of the island in the last few years due largely to the abolition of spring shooting: *A.* Red-breasted Merganser, Black Duck, Scaup Duck, all three Scoters, Canada Goose and Brant. All but the last two now stay in numbers until the end of May. The Black Duck now probably breeds as far west as Long Beach. *B.* Formerly very rare, now regular in spring are the Dowitcher, Knot and Red-backed Sandpiper. *C.* Greatly increased in numbers are especially the Hudsonian Curlew, Black-bellied Plover, Piping Plover and Turnstone. The Piping Plover now probably breeds as far west as Jones Beach, where pairs are seen the very end of May. Much less common in the fall.

In the present paper, we have also gathered together a few records which we hope will be of service to the numerous observers now interested in Long Island birds.

Podilymbus podiceps. **PIED-BILLED GREBE.**—Unusually numerous in the fall migration of 1916; about 20 were observed in one day (Sept. 18) in the East Bay at Mastic. One observed on Prospect Park Lake, Brooklyn, Oct. 12.

Gavia immer. LOON.—Observed as late in the spring as June 1 (1907, Mt. Sinai) and we presume in fall migration July 9 (1911, Mastic). Mr. W. T. Helmuth reports this species from Easthampton July 6 to 7 (1915). Perhaps these early July birds should be considered as summering or even as stragglers from the spring migration. One, in immature plumage, was seen off the Mastic beach on June 24, 1916. Migrating Loons fly with the bill open. Doubtless so heavy and short-winged a bird requires a great deal of oxygen for protracted flight. The migration of the Loon is a very interesting and irregular one. The species arrives from the north early in August, so far as we know young birds as well as adults, and is frequently met with through the month. A lull then ensues, and during September and October the Loon is usually decidedly uncommon. There is frequently a flight early in November. After another lull the main flight of the fall takes place the latter part of December, and usually by the first of January the wintering individuals are left behind. Their numbers vary greatly in different parts of the island from year to year. The spring migration starts with the first mild weather in March, increasing steadily until the last week of the month and the first week in April, when the species is abundant, traces of the summer plumage being evident. From this time till the 20th of May, very few Loons are seen, at least at the western end of Long Island. Those seen are usually still in the winter plumage even in the middle of May. From May 20 to June 1, there is another big migration of Loons mostly in full summer plumage. They are most abundant from May 24 to May 28, and a few days later only stragglers remain.

Gavia stellata. RED-THROATED LOON.—Six white-throated birds observed off Herod's Point, on the Sound, on August 24, 1905. They were observed from a blind on the beach, and came within thirty feet of the observer. (R. C. M.)

Alle alle. DOVEKIE.—Specimens have recently been sent from Montauk Point to the Brooklyn Museum, as follows: 1 on February 25, 1916; 1, a female, on April 3, 1916; 1, a female, on May 29, 1916. The last bird was perfectly fresh when picked up dead on the beach. Mr. A. H. Helme tells us of Dovekies shot off the south shore of Long Island in June. Mr. W. S. Dana, of Mastic, has a mounted specimen which he collected in Forge River, Moriches Bay, in August, 1913. December 11, 1909 (10 miles off Shinnecock) two hundred seen, apparently the largest number seen in Long Island waters.

Rissa tridactyla tridactyla. KITTIWAKE.—October 13 and 27, 1912 (Long Beach) are the earliest fall dates. The fall of 1912 was characterized by the early arrival of an unusual number of northern species.

Larus hyperboreus. GLAUCOUS GULL.—Recent records for western Long Island are as follows: January 8, 1912 (Manhattan Beach) W. H. Wiegmann; February 12, 1912, March 3, 1912, (Long Beach).

Larus marinus. GREAT BLACK-BACKED GULL.—May 13, 1910 (Long Beach) and April 8, 1912 (Gardiner's Island) latest spring dates.

Larus philadelphia. BONAPARTE'S GULL.—May 19, 1912 (Long Beach) latest spring record.

Larus atricilla. LAUGHING GULL.—A specimen from Great Neck, October 8, 1916, is the latest we know of except for the October 28, 1880 record mentioned by Cooke. Probably the Laughing Gull normally occurs on Long Island shores until about the last of September. May 17, 1911 (Long Beach) recent spring record.

Sterna dougalli. ROSEATE TERN.—During 1915 and 1916 this species has been much more abundant than generally in recent years at the eastern end of Long Island. Specimens collected at Montauk on August 8, 1915, had young mackerel in their stomachs.

Sterna antillarum. LEAST TERN.—Mr. Robert W. Peavey, of Brooklyn, found a pair of Least Terns at Seaford on June 25, 1916. They flew around him closely, approaching within fifteen feet of him, and acted as though they were breeding.

Puffinus borealis. CORY'S SHEARWATER.—

Puffinus gravis. GREATER SHEARWATER.—Abundant off Montauk Point on August 8, 1916, when seven specimens of each species were collected by Mr. Francis Harper and one of the writers.

Puffinus griseus. SOOTY SHEARWATER.—One observed on the water off the beach at Mastic, October 13, 1913. It was attacked by the numerous gulls present and driven back onto the water whenever it attempted to take wing.

Oceanites oceanicus. WILSON'S PETREL.—Twice seen over the sound from the shore at Port Jefferson, each time in September. Many seen from the shore at Eaton's Neck on the Sound, on July 25, 1915. Several collected from the shore at Montauk, during a storm on August 4, 1916. Occasionally numerous off the ocean beach, as on June 30, 1913, when it was estimated that at least a thousand were within binocular range at one time, from a point on the crest of the dunes at Mastic. Many of their feathers were scattered along the line of wash on the beach, particularly primaries, with some tail-feathers, so they were evidently in active molt. Occasionally in summer one sees a few Wilson's Petrels over Great South Bay well inside of Fire Island Inlet.

Sula bassana. GANNETT.—May 25, 1914, (Mastic) appears to be the latest spring date for this species. December 11, 1909 (off Shinnecock), December 27, 1912 (Long Beach) January 5, 1913 (Long Beach), are recent winter records.

Phalacrocorax auritus auritus. DOUBLE-CRESTED CORMORANT.—March 31, 1912 (Long Beach) the earliest spring record; December 14, 1913 (Long Beach) is a recent winter record; July 12, 1911 (off Rockaway Pt.) a recent summer record.

Mergus americanus. AMERICAN MERGANSER.—April 8, 1912 (Gardiner's Island) the latest spring record.

Mergus serrator. RED-BREASTED MERGANSER.—Now remains regularly until the end of May, May 25, 1913 (Jones Beach) being the latest date, over a hundred being then observed.

Anas platyrhynchos. MALLARD.—

Nettion carolinense. GREEN-WINGED TEAL.—

Spatula clypeata. SHOVELLER.—

Nafla acuta. PINTAIL.—

Marila valisineria. CANVASBACK.— In spite of the in some respects backward fall migration this year (1916), many Ducks reached Long Island unusually early, and our earliest dates for the following species, except the Shoveller, were obtained at Mastic. Mallard, two or three, and one Pintail, August 21; Green-winged Teal, a few, September 4. All three species observed with Black Duck. Canvasback, October 11, and Shoveller October 14 (one and two respectively killed by Dr. Rolfe Floyd). The earliest date for Shoveller is October 1 (1913), Quogue, a male and female killed from a flock of three by Mr. H. F. Stone. The rarity of this duck perhaps accounts for its not having been recorded from the island earlier in the season. The Mallard occurs occasionally in winter as well as in migrations. A Mallard observed at Long Beach, March 26, 1911, by Messrs. C. H. Rogers, Ludlow Griscom and G. E. Hix, we consider the earliest spring date. The Pintail in 1916 either wintered or lingered very late in unusual numbers. It was repeatedly observed during December on the lake in Prospect Park, Brooklyn. A flock of about a dozen were observed December 16 at Roslyn and another of thirteen individuals was seen December 24 near East Rockaway.

Mareca penelope. EUROPEAN WIDGEON.— One drake April 5-7, 1912 (Gardiner's Island) has not been recorded.

Chaulelasmus streperus. GADWALL.— A fine drake shot by Mr. Samuel Bettle at the South Side Club, November 27, 1914. Two drakes were shot by Mr. Edwin Thorne at the South Side Club, Oakdale on December 13, 1916, and a female was also killed by another member of the club.

Marila americana. REDHEAD.— Two, March 12, 1911 (Long Beach), a recent spring record for western Long Island.

Marila marila. SCAUP DUCK.— May 30, 1911 (Long Beach) latest spring date.

Marila sp. SCAUP.

Charitonetta albeola. BUFFLEHEAD.

Oidemia americana. AMERICAN SCOTER.

Oidemia deglandi. WHITE-WINGED SCOTER.

Oidemia perspicillata. SURF SCOTER.— Crippled ducks of various species are of course to be found on Long Island during the summer. Individuals of non-breeding species which can not be classed as cripples also occasionally occur. Such are a Scaup over the Narrow Bay, June 26, 1915, a female or immature plumaged Bufflehead May 13, 1916, and a male Bufflehead in summer a few years previously, all observed on the wing at Mastic. Three American Scoters, of which one acted like a cripple, were seen off False Point, Montauk, on August 8, 1915; a White-winged Scoter lay a short distance off shore at Eaton's Neck, on the Sound, for the greater part of the week ending August 6, 1916. Six were seen together off Rocky

Point on August 23, 1905. Over a hundred White-winged and Surf Scoters were seen between Roanoke Point and Orient Point, on June 27-30, 1906. The White-winged Scoter has been observed at Mastic as late in the spring migration as May 23, 1914. Probably non-breeding birds of any of the three Scoters may spend the summer off Long Island. All three species remain regularly until the end of May, the following being the latest dates, American Scoter, May 26, 1912, (Oak Island Beach), White-winged Scoter, May 28, 1911, (Long Beach) Surf Scoter, May 25, 1913 (Jones Beach).

Histrionicus histrionicus. HARLEQUIN DUCK.—Mr. W. S. Dana has an adult male Harlequin taken by him at Smith's Point, Moriches Bay, during the first week of November, 1915.

Somateria spectabilis. KING EIDER.—A female or young male was taken at Mastic early in October, 1912, by Mr. W. S. Dana, who still has the skin.

Branta canadensis canadensis. CANADA GOOSE.—February 12, 1912 (Long Beach) sixty-nine, January 18, 1914 (Long Beach), and February 22, 1914, (Montauk) are recent winter records.

Wintered in unusual numbers in 1914-15; a flock of about four hundred birds observed at Mastic, January 30, 1915.

Branta bernicla glaucogastra. BRANT.—February 12, 1912 (Long Beach), nine, January 18, 1914 (Long Beach) seventy-three; February 22, 1914, (Montauk) five; are recent winter records. On December 28, 1913 (Jones Beach) 636 birds were seen, a remarkable number so late in the season.

Olor columbianus. WHISTLING SWAN.—Mr. Wm. T. Helmuth observed three Swan at Shinnecock January 1, 1911.

Herodias egretta. EGRET.—An Egret spent the greater part of the summer of 1916, at Setauket. It was seen several times by one of the writers on July 22, before which it had been several weeks in the vicinity.

Butorides virescens virescens. GREEN HERON.—October 13 is our latest date (Port Jefferson, 1915).

Rallus crepitans crepitans. CLAPPER RAIL.—January 28, 1912 (Long Beach), two, a recent winter record.

Fulica americana. COOT.—The only winter record we know of is a single bird observed at Mastic, February 12, 1916.

Steganopus tricolor. WILSON'S PHALAROPE.—Mr. H. F. Stone of Lawrence has in his collection an immature bird taken there this year (August 19, 1916).

Macrorhamphus griseus griseus. DOWITCHER.—May 24, 1914 (Jones Beach) twenty-eight, a recent spring record near New York City.

Tringa canutus. KNOT.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.

Agialitis semipalmata. SEMIPALMATED PLOVER.—May 26, 1912 (Oak Island Beach) one; May 25, 1913 (Jones Beach) two; May 24, 1914 (Jones Beach) four; are recent spring records for Knot on western Long

Island. Mr. E. P. Bicknell writes that he observed "on June 22 at Long Beach (1916) a flock of twenty-one *Ereunetes pusillus* and with them one *Aegialitis semipalmata* and one *Tringa canutus*." This is the latest spring date for all three species.

Arquatella maritima maritima. PURPLE SANDPIPER.—Three seen November 9, 1912 (Manhattan Beach) by W. H. Wiegmann.

Pelidna alpina sakhalina. RED-BACKED SANDPIPER.—Ninety-six, May 25, 1913 (Jones Beach), an unusual number for so rare a spring migrant.

Calidris leucophæa. SANDERLING.—January 4, 1910 (Long Beach) and December 4, 1913 (Long Beach) are recent winter records. A red-breasted specimen was shot by one of the writers from a flock on the sea beach north of Great Pond, Montauk, August 3, 1915.

Limosa fedoa. MARBLED GODWIT.—Now rarer than the Hudsonian Godwit. Two were shot by Mr. W. S. Dana on Moriches Beach, August 10, 1910, and the skin of one preserved.

Limosa hæmastica. HUDSONIAN GODWIT.—

Tryngites subruficollis. BUFF-BREASTED SANDPIPER.—The status of these two rare shore-birds on Long Island seems not to have changed appreciably in the last twenty-five or thirty years. There was a Buff-breasted Sandpiper in the collection of the late deL. Berier from Gowanus Bay presumably in the late eighties, though it bears no further data. We learn that the 1888 specimen recorded by Dutcher (Auk 1889) as from Mastic was collected by Dr. Rolfe Floyd. Messrs. Wm. T. and J. L. Helmuth inform us that two have recently been taken near Easthampton, viz. on September 7, 1910, and September 4 (Sagaponack Beach, Bridgehampton), 1916. In a letter recently received, Mr. W. F. Hendrickson writes that his brother (Mr. J. H. Hendrickson) reports "five specimens of the Buff-breast within the past few years." Probably Hudsonian Godwit stragglers occur each year—we know of one (an adult taken at Mastic August 21, 1915, and another (immature) taken at the same place October 6, 1916.

Bartramia longicauda. UPLAND PLOVER.—Reported by Mr. Henry Thurston from Floral Park, October 20, 1916, the latest Long Island date.

Actitis macularia. SPOTTED SANDPIPER.—April 21, 1912 (Long Beach) earliest spring arrival.

Numenius hudsonicus. HUDSONIAN CURLEW.—Long Beach, May 31, 1914, C. H. Rogers, is the latest spring date of which we know.

Squatarola squatarola. BLACK-BELLIED PLOVER.—One hundred and fifty May 27, 1911 (Long Beach); three hundred May 25, 1913 (Jones Beach); four hundred May 24, 1914 (Jones Beach); to show increase of this species in the spring. Two seen at Long Beach, November 26, 1916, obviously not cripples, the latest fall date.

Aegialitis meloda. PIPING PLOVER.—Two November 7, 1911 (Long Beach) latest fall date; five pairs seen May 24, 1914 (Jones Beach).

Arenaria interpres morinella. RUDDY TURNSTONE.—Twenty-four

and one hundred and six May 27, 1911 (Long Beach); sixty May 25, 1913 (Jones Beach); fifty-five May 24, 1914 (Jones Beach).

Zenaidura macroura carolinensis. MOURNING DOVE.— March 14, 1915, near Valley Stream, is the earliest spring record.

Cathartes aura septentrionalis. TURKEY VULTURE.— Mr. Wm. T. Helmuth reports one from Easthampton on June 24, 1914. Another was seen by one of the writers at East Quogue on July 4, 1911. It is a rare bird on the island, especially so far east.

Astur atricapillus atricapillus. GOSHAWK.— An adult male was taken by Mr. F. M. Schott at Half Hollow Hills, near Melville, on November 12, 1915.

Falco peregrinus anatum. DUCK HAWK.— Apparently a late spring visitor to the Long Island marshes. Observed both 1913 and 1914 on our Shore-bird trips. On May 24, 1914, a Duck Hawk was seen giving chase to a flock of "oxeyes." It overtook the last bird, and struck at it eleven times. Each time the "oxeye" at the last moment twisted and dodged. The hawk then played the "sour grapes" act; it did n't care for "oxeyes" anyhow, and flew off to the northward.

Falco columbarius columbarius. PIGEON HAWK.— This hawk was unusually numerous in the fall migration of 1916; the last bird seen on October 15, Mastic, a very late date for the species; oddly enough, Mr. C. H. Rogers observed one at Long Beach on the same day.

Asio flammeus. SHORT-EARED OWL.— May 17, 1911 (Long Beach) is the latest spring date for western Long Island. There is a possibility it was breeding.

Coccyzus americanus americanus. YELLOW-BILLED CUCKOO.— One seen at Queens, May 7, 1916, the earliest spring date.

Sphyrapicus varius varius. SAPSUCKER.— Garden City, April 20, 1916, is our earliest date; Wading River, December 27, 1906, the latest.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.— A rare summer resident on the island. A pair of this species nested in 1896 and 1897 in an old willow tree on a lawn at Flushing. The tree was blown down, and the birds did not appear the next year.

Otocoris alpestris alpestris. HORNED LARK.— October 27, 1912 (Long Beach) is apparently the earliest fall date.

Molothrus ater ater. COWBIRD.— January 12, 1912 (Manhattan Beach) by Mr. George E. Hix is the only recent winter record for western Long Island known to us.

Plectrophenax nivalis nivalis. SNOW BUNTING.— March 26, 1911 (Long Beach) latest spring date.

Calcarius lapponicus lapponicus. LAPLAND LONGSPUR.— This species, though of regular occurrence at the eastern end of Long Island is very rare near New York City. Recent records are November 26, 1910 (Manhattan Beach) by W. H. Wiegmann and G. E. Hix; November 25, 1911 to February 11, 1912 up to 5 individuals present (Manhattan Beach); November 26, 1916, one (Long Beach).

Poecetes gramineus gramineus. VESPER SPARROW.—January 18, 1912 (Long Beach), and December 26, 1914 (East Rockaway), are recent winter records.

Passerculus princeps. IPSWICH SPARROW.—April 21, 1912 (Long Beach) latest spring date.

Passerculus sandwichensis savanna. SAVANNAH SPARROW.—May 25, 1913 (Jones Beach) the latest spring date, if not breeding.

Passerherbulus henslowi henslowi. HENSLOW'S SPARROW.—FOR several years we have been aware that the Henslow's Sparrow was summering rather commonly at Mastic near the landward edge of the meadows where these are quite fresh (see Bird-Lore, December, 1913), but know of no nests having been found until May 30, 1916, when one of the writers in company with Mr. Charles H. Rogers flushed a Henslow's Sparrow from a nest with eggs, in a dry field with sparse grass about a stone's throw from where the land dropped away to a tree-bordered creek. The birds had been seen in the vicinity for about two weeks previously, and when first noticed were assumed to be migrants, the locality being far removed from and quite unlike that in which the bird usually summers. The young hatched, but were found dead in the nest on June 10, very likely as a result of heavy rain. The situation was an exposed one, probably more so than that to which the species is accustomed. In this connection we note that Meadow-larks and Grasshopper Sparrows which commonly nest in such places with scant grass, build arched nests, whereas that of the Henslow's Sparrow was perfectly open.

Passerherbulus maritimus maritimus. SEASIDE SPARROW.—December 27, 1912 (Long Beach) the only winter record for the State. The three birds seen remained several weeks.

Spizella passerina passerina. CHIPPING SPARROW.—One bird observed at East Rockaway, December 24, 1916, constitutes the only winter record for Long Island known to the writers.

Melospiza lincolni lincolni. LINCOLN'S SPARROW.—One seen on the ridge north of Queens, on May 7, 1916. This is the earliest of which we know.

Cardinalis cardinalis cardinalis. CARDINAL.—Of late years very rare. A male in the cedar grove at Sheepshead Bay observed by Messrs. C. H. Rogers, and G. E. Hix, January 1, 1912, is the only recent occurrence of which we are cognizant.

Zamelodia ludoviciana. ROSE-BREASTED GROSBEAK.—May 24, 1914 (Jones Beach) is the latest spring migration date for this species.

Progne subis subis. PURPLE MARTIN.—May 19, 1912 (Long Beach), one of the few spring migration dates for places on the island where the species does not breed.

Vireosylva philadelphia. PHILADELPHIA VIREO.—One observed September 28, 1913, Oyster Bay (J. T. N.) is the latest Long Island date.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO.

Dendroica tigrina. CAPE MAY WARBLER.—

***Dendroica magnolia*.** MAGNOLIA WARBLER.—

***Dendroica palmarum palmarum*.** PALM WARBLER.—

***Wilsonia pusilla pusilla*.** WILSON'S WARBLER.—

***Setophaga ruticilla*.** REDSTART.—In the fall of 1916 migrating warblers lingered unusually late, and we obtained our latest Long Island dates for the following birds, all at Mastic; Wilson's Warbler, October 12; Cape May Warbler October 14; Palm Warbler and Redstart October 15; Blue-headed Vireo October 22; to these should be added the Magnolia Warbler observed at Long Beach by Mr. Griscom, October 22. Mr. C. H. Rogers observed a Palm Warbler at Long Beach on October 15.

***Helminthos vermivorus*.** WORM-EATING WARBLER.—May 18, 1912 (Prospect Park). Mr. Chas. Johnston.

***Vermivora pinus*.** BLUE-WINGED WARBLER.—July 27, 1912 (off Long Beach), an individual was seen to fly on board a transatlantic liner from the north. An interesting record to prove how early this species leaves its breeding grounds.

***Vermivora peregrina*.** TENNESSEE WARBLER.—One observed May 23, 1914, Mastic (J. T. N.) the latest spring date.

***Dendroica tigrina*.** CAPE MAY WARBLER.—May 5, 1911 (Prospect Park) Mr. Chas. Johnston; August 28, 1915 (Mastic) earliest fall date.

***Dendroica palmarum hypochrysea*.** YELLOW PALM WARBLER.—April 6, 1912 (Gardiner's Island) earliest spring date. One bird observed at Garden City, January 3, 1917 (J. T. N.) is the only winter record known to the writers.

***Seiurus noveboracensis*.** WATER-THRUSH.—April 29, 1916, (Long Beach) is our earliest spring date.

***Seiurus motacilla*.** LOUISIANA WATER-THRUSH.—April 5, 1914, (Flushing), H. S. Boyle, is the earliest spring date.

***Geothlypis trichas trichas*.** NORTHERN YELLOW-THROAT.—April 20, 1913 (Long Beach) earliest spring date.

***Anthus rubescens*.** PIPIT.—January 4, 1910 (Long Beach) is a recent winter record.

***Telmatoodytes palustris palustris*.** LONG-BILLED MARSH WREN.—Three or four October 22, 1916, Mastic, were evidently not wintering birds; and are the latest migration date for the species.

***Sitta canadensis*.** RED-BREASTED NUTHATCH.—April 20, 1913, (Long Beach) earliest spring arrival.

***Hylocichla mustelina*.** WOOD THRUSH.—Wood Thrushes at Hauppauge, October 12, 1915, and Mt. Sinai, October 13, 1915 are late, but not the latest records for Long Island.

PERSONALIA IN ORNITHOLOGY — REPORT OF THE
COMMITTEE ON BIOGRAPHY AND BIBLIOGRAPHY.¹

BY T. S. PALMER.

THE term 'personalialia' is employed in several foreign journals to include biographical notices, accounts of collecting expeditions and personal notes regarding the activities of ornithological workers in the museum or in the field. Such data though brief are not only interesting, but often of much historical value in shedding light on the progress of ornithological science. Too little attention has hitherto been paid in this country to the personal side of ornithological activity, or to the circumstances under which the specimens which form the basis of our systematic work have been collected. For a century and a half we have been so occupied with the making of ornithology that we have had little time to consider the makers of the science.

If more were known of the circumstances under which certain type specimens were collected or described and more facts were available regarding the methods of work of early ornithologists and the routes of field collectors much of the uncertainty concerning the type localities of some species would disappear and some of the troublesome questions in synonymy would be cleared up.

The time is at hand when more information along these lines will be demanded. In revising groups of birds it becomes necessary to review the results of earlier workers to ascertain where the specimens were collected, in order to determine the type localities of these species and tell whether or not they were different from the material under examination. With the greatly increased popular interest in ornithology there is also a demand on the part of teachers and general readers for more information regarding the personal side of bird study, for details which will make an author mean something more than a mere name, which will make him stand out as a human being and which will answer inquiries regarding his appearance, personal characteristics and methods of work.

¹ Presented at the 34th Stated Meeting of the A. O. U., Philadelphia, Nov. 16, 1916.

The names of Audubon, Baird and Coues at once call to mind a host of incidents associated with their work, but the names of Boddaert Brünnich and Pontoppidan recall little more to the average reader than obscure references in the Check-List.

At the 33d Annual Meeting of the American Ornithologists' Union held in San Francisco in May 1915, a Committee on Biography and Bibliography was appointed consisting of Palmer, Cooke Deane, Richmond and Stone. The necessity for such a committee became evident during the preparation of the Ten Year Index to 'The Auk,' when in order to bring the data regarding authors and biographies up to the requirements of modern bibliography and to the standard of the rest of the Index it became necessary to add several members to the Index Committee to assist in completing names and collecting biographical data. The information thus obtained was utilized in the Index of Biographies published in the introduction to the Ten Year Index (pp. xi-xxiii) and in revising the list of deceased members of the Union in 'The Auk' for April, 1915.

In order to outline the work of the committee, a letter was addressed by the chairman on September 30, 1915, to each of the members calling attention to the fact that the duties intrusted to the committee necessitated a definite plan of work in biography and bibliography; that in biography the first duty was to assist the editor of 'The Auk' in the preparation of current obituary notices, in bibliography it was evident that the committee had neither the time nor means to undertake a comprehensive work such as that projected by the late Dr. Elliott Coues, but that a practical plan could probably be worked out which would result in a material contribution to existing bibliographies of ornithology. A tentative plan was suggested which met the approval of the members and with some minor modifications has formed the basis of the activities of the year. Under this plan the work was distributed under three headings — Biography, Bibliography and Manuscripts — including ten subjects, as follows:

(a) In Biography

- 1 Biographies, including obituary notices of A. O. U. members.
- 2 Brief sketches of the foreign members of the A. O. U.
- 3 An index to published portraits of A. O. U. members.

- 4 An index to published portraits of other ornithologists.
- 5 An index to the published correspondence of Audubon.
- (b) In Bibliography — a bibliography of bibliographies including
 - 6 A brief list of the more important bibliographies of American and Foreign birds including those in State lists.
 - 7 An index to published bibliographies of authors.
 - 8 An index to information on routes of ornithological collectors.
 - 9 Special bibliographies of subjects not included in existing bibliographies, for example bird photography, hybridism and indexes to papers on the more important collections of birds, type specimens, etc.
- (c) In Manuscripts
 - 10 Investigation of the present location and condition of some of the more important ornithological manuscripts, published and unpublished, including the papers and correspondence of Bendire, Cooper, Coues, Wilson and others.

WORK OF THE YEAR.

Before reviewing the work accomplished during the past year it is proper to refer to the severe loss which the committee has sustained in the death on March 30, 1916, of Prof. Wells W. Cooke, one of the most active members. Specially qualified for research of this kind, a tireless worker, and deeply interested in the topics assigned him, his loss has been a serious handicap. Naturally the work in which he was engaged, the preparation of a list of bibliographies in State lists and an index to publications containing information on routes of ornithological collectors, has been suspended since his death.

Of the ten subjects mentioned in the above outline of work, five have received special attention and some progress made in each case.

Biography.— The published records of the Union should contain some notice, however brief, of every person who is a member of the Union at the time of death. At present these notices appear in 'The Auk,' and it is often difficult for the editor, in addition to his

other duties, to collect the necessary data for a biographical sketch. An important part of the duties of the Committee on Biography is to assist in the preparation of obituary notices.

Even more interest attaches to the personal history and work of members who are still alive than to those whose labors have been completed. In these days of "Who's Who" and similar biographical dictionaries it might seem that facts regarding the biography of members were readily accessible, but such proves not to be the case. The Committee has, therefore, undertaken the preparation of an index of the published biographical sketches of members of the Union. This index now contains references to sketches of nearly all of the Fellows, about one third of the Members and a few of the Associates. Every member of the Union should have on file with the Secretary a record of his full name and address and a reference to any sketch of his work which may have been published.

Portraits.—Portraits of A. O. U. members are published from time to time in various places, but are widely scattered and very few of them are mentioned in the great index of portraits prepared by the American Library Association. As one feature of its work the Committee has undertaken an index to published portraits of A. O. U. members. This index now contains entries for about 170 members, 113 of whom are living and 57 deceased. In this list are 30 Fellows, 11 Corresponding Fellows, 28 Members, and 34 Associates. The entries in the deceased list are about equally divided between Fellows, Honorary Fellows, Corresponding Fellows, and Associates.

Audubon Correspondence.—Many letters of Audubon have been published from time to time and a considerable volume of his correspondence is now available to the general reader. Mr. Ruthven Deane who, by reason of his familiarity with Auduboniana, is specially qualified for the task has undertaken to prepare a list of letters of Audubon which have thus far appeared in print.

Bibliography.—Bibliographies and indexes form the tools of the scientific student and are as essential for his work as a good camera to a photographer or a telescope to an astronomer. Attention has thus far been concentrated on the preparation of a list of author's bibliographies. In the lists of their papers which have

been published by a number of ornithologists appear many titles which are easily overlooked and are not included in ordinary bibliographies. About 40 such lists have already been found and the number of titles included in them is about 6,800.

Manuscripts.—Manuscripts, like type specimens, are unique and highly prized by their owners. As a rule not many ornithological manuscripts are apt to be found in any one place outside the archives of a few of the larger museums. The manuscripts which are likely to possess the greatest historical interest are diaries, personal letters from ornithologists, and copies of unpublished, or in a few instances published works. The Committee has been successful in locating several interesting manuscripts which may be briefly mentioned.

In the Bancroft Library of the University of California, Berkeley, Calif.—

- (a) The unpublished manuscript and plates of L. Belding's Water Birds of California.
- (b) The unpublished manuscript and plates of Col. A. J. Grayson's Birds of Mexico.

Both of these manuscripts are in an excellent state of preservation, are carefully preserved in steel cases, and are readily accessible.

In the possession of Mr. W. O. Emerson, Haywards, Calif.—

- (a) A brief unpublished description of the 'Quesal' by Charles Lucien Bonaparte.
- (b) Manuscript copies of Bonaparte's Am. Ornithology, vols. II, III and IV, interesting historically because they are in Bonaparte's handwriting.
- (c) Manuscript of Dr. J. G. Cooper's Report on the Survey of Oregon and Washington and the Birds of California (the latter incomplete).
- (d) Several diaries of Dr. Cooper, 1858–1860.

In the Manuscript Division of the Library of Congress, Washington, D. C.—

- (a) Part of the original diary of Titian Ramsay Peale on Long's Expedition to the Rocky Mountains, 1 vol. May 3 to Aug. 1, 1819.
- (b) Four volumes of the diary of Peale on the Wilkes Exploring Expedition, 1839 to 1842.

Apparently the complete diaries of this latter expedition filled 8 volumes of which the 2d, 3d, 5th and 7th are in the Library of Congress.

- (c) Fourteen volumes of papers of Dr. Jean Louis Berlandier, including an unpublished work in 7 volumes entitled 'Voyage au Mexique,' 1826 to 1834, containing a full account of Berlandier's travels during his first seven years in Mexico.

In the possession of Kenneth F. Beal, Branchville, Md.—

- (a) A valuable set of diaries of the late Prof. F. E. L. Beal extending over a period of nearly 40 years.

In the possession of the chairman of the committee.—

- (a) A copy of the field diary of Titian R. Peale on his trip to Florida in 1824–25.

Inquiries concerning the papers of the late Dr. Elliott Coues have thus far met with no success, and the whereabouts of his correspondence is at present unknown.

The Committee has received a generous offer of the papers and correspondence of the late Major Charles E. Bendire on condition that satisfactory arrangements can be made for their permanent preservation in a place where they will be safe and readily accessible. It is hoped that the acquisition of this valuable collection of the papers of one of our most prominent field ornithologists can be consummated in the near future.

FUTURE WORK.

The work for the immediate future will be continued along the lines indicated, and will be expanded from time to time as opportunity offers. In biography, the series of brief sketches of foreign members should be taken up as soon as the necessary data can be obtained. The deceased list of the Union now includes about 250 names and sketches of about 190 of these persons have been published in 'The Auk' and an Index to them in the introduction of the Ten Year Index to 'The Auk.' With the index to published biographies of living members now being prepared, members of the Union will have ready references to most of the biographical material published in this country regarding the membership of

the A. O. U. In addition much material has appeared in the pages of 'The Ibis,' 'London Field' and other foreign journals and in foreign collections of biography all of which should be made accessible.

This work should not be confined to members of the Union but should be extended at least to include all persons whose names are associated with systematic work on North American birds. Considerable material has already been collected along this line by the chairman of the committee. With the activity now displayed in the study of South American ornithology by several museums in this country it would undoubtedly be helpful to have as much information as possible relative to the work of those who have collected or described material from the wonderfully rich region south of Panama.

It is rather remarkable that although biography forms such an important part of the literature in a general library, and so much has been published regarding the lives of workers in astronomy, botany, and medicine, such information concerning ornithologists is so scattered and in many cases so fragmentary. Particularly is this true of American ornithologists only half a dozen of whom — Audubon, Bachman, Baird, Boardman, Scott, Wilson, and possibly one or two others, have been considered sufficiently important to have special volumes devoted to their lives. Audubon and Wilson have each been the subject of several volumes, while the labors of such prominent workers as Dr. Coues and others are recorded only in memorial addresses or in brief sketches in journals or reviews. More attention has been paid to this subject in England and Germany where biographical information is published more fully and thus made more accessible. It is something more than mere gratification of curiosity to be able to find something about the work of ornithologists who have become eminent or whose labors are now finished. Although it may be interesting to know that Brünnich described the Loon (*Gavia immer*), and the genus *Plautus* for the Great Auk, and that his work is commemorated in the name of one of the species of murre, it is more important to know that Dr. Morton Thrane Brünnich, author of the genus containing the emblem of the A. O. U. was a contemporary of Linnaeus, that he was one of the leading Danish zoölogists and that he

died in 1827 at the age of 90 (an age attained by few ornithologists). In order to compare his work with that of modern ornithologists it is necessary to know something of his methods and the material at his disposal and it is also important to have access to a sketch of his life in English for the benefit of those who cannot read his biography published in Danish.

It will soon be time to prepare a new edition of the Check-List. In addition to a reëxamination of some of the type localities which evidently require revision, the next edition should show the date when the type was collected of each species which was based on a definite specimen so as to indicate whether or not the bird was in breeding plumage. Whenever possible a statement should be added to indicate whether or not the specimen is now extant. Much of this information can be secured only through collateral sources of information, by examination of special papers on type specimens and museum collections, by study of the routes of collectors and by examination of original field diaries. Research along these lines promises some interesting and important results and the desirability of the early preparation of the biographies and routes of collectors and of special papers on collections is self evident.

To the officers of the Union the committee on biography can render much service: To the secretary in perfecting the record of full names and addresses of the members, to the treasurer in recommending new names for membership and in following up some of the members who have dropped out, and to the editor in supplying data for obituary notices and in preparing notices of deceased members.

In this connection an invitation is extended to any person who may be interested in the work to coöperate with the committee in its projects in biography or bibliography; and especially to any person who may know of the existence of ornithological manuscripts or diaries, to communicate with the committee in order to assist in preserving and making known material which may be of great historical value in working out some of the problems of systematic ornithology.

REMARKS ON COLORADO BIRDS.

BY WILLOUGHBY P. LOWE, M. B. O. U.

THE following notes relate to some birds occurring in Pueblo or Huerfano Counties about which a few observations made between the years 1888 and 1901, may be of interest to future workers on Colorado ornithology. At that time when the country southwest of Pueblo was free range and my daily occupation was to ride it, gun in hand, I had exceptional opportunities to study the birds. Since those days it is much changed and farms and farming have taken the place of a free, wild expanse of country and bird and animal life must necessarily change also. Birds like the Wild Turkey were practically extinct in 1888 and are now never likely to be seen again in a wild state. On the other hand artificial ponds and increased vegetation will no doubt attract birds not seen in those days. The late Prof. W. W. Cooke and Mr. Wm. Sclater have written most useful works on Colorado birds. In these books there are mentioned some species whose occurrence at certain times of the year or whose nesting in this district is doubtful or unrecorded. It is in such cases where possible that I have given a note on the subject trusting that they will be acceptable to those who are still working on Colorado birds.

Pelecanus erythrorhynchos. AMERICAN WHITE PELICAN.—I have a fine female killed on Lake Minnequa, Pueblo. This species formerly occurring quite plentifully on migration has been so persecuted on arrival that very few if any survived to continue their journeys to and from their breeding grounds so that latterly it was less often seen.

Pisobia maculata. PECTORAL SANDPIPER.—Usually very common during wet seasons in Pueblo County out on the open plains where large sheets of water often remain for a month or two in the spring and fall.

Callipepla squamata. SCALED QUAIL.—Previous to my recording the capture of this species in 'The Auk' in 1895 I had on two occasions four years before put up quail on dry hillsides which I believe belonged to this species and I therefore have no doubt that Prof. Cooke's statement that it had been known to the cowboys many years ago is quite correct.

Meleagris gallapavo merriami. MERRIAM'S TURKEY.—The only time I met with the Wild Turkey in Pueblo Co. was in the spring of 1895

in some thick piñon trees. Unfortunately I was not able to shoot it, but it probably belonged to this subspecies.

Columba fasciata fasciata. BAND-TAILED PIGEON.—During the breeding season and summer months these birds are usually seen singly or in pairs, but during the autumn in the Red Cañon, Wet Mts., Huerfano Co., they congregate in large flocks of several hundred birds prior to their departure south.

Archibuteo lagopus sancti-johannis. AMERICAN ROUGH-LEGGED HAWK.—This species is not plentiful in Pueblo Co., and I have not observed it in Huerfano Co. I have seen it chiefly in the spring and fall, usually perched on a fence post.

Thrasaëtus harpyia. HARPY EAGLE.—This is only an accidental visitor to Colorado. One was shot by Geo. Cress of Lees, Pueblo Co., some years ago and preserved by Doertenbach of Pueblo, who informed me upon inquiries that there was no doubt as to its identification. A short notice mentioning its capture appeared in the "Field and Farm" newspaper of Denver.

Haliaeetus l. leucocephalus. BALD EAGLE.—Seen on only two occasions in Pueblo Co. during the spring, flying along the edge of a mesa.

Falco mexicanus. PRAIRIE FALCON.—Occurs in Pueblo Co. at all times of the year. I have taken a specimen in January.

Pandion haliaëtus carolinensis. AMERICAN OSPREY.—I have only noticed these birds in Pueblo Co. during the spring at which season I obtained a nice specimen in the St. Charles Cañon.

Otus asio maxwelliae. ROCKY MOUNTAIN SCREECH OWL.—Both *maxwelliae* and *aikeni* occur in Pueblo Co. Nests may be found in holes of juniper trees. I agree with Mr. Selater who doubts whether these two subspecies can be kept separate, and a large series if collected would probably prove them to be synonymous. They feed on mice and grasshoppers.

Speotyto cunicularia hypogæa. BURROWING OWL.—In Pueblo Co. I have never met with these birds during the winter months and I do not believe that they winter here.

Dryobates scalaris bairdi. TEXAN WOODPECKER.—This is probably the rarest woodpecker of the district and in its habits differs from all the others by its love for cactus bushes which it climbs readily, being quite indifferent to the terrible spikes. It is also found, though more rarely, in the juniper and piñon trees.

Cypseloides niger borealis. BLACK SWIFT.—I have never seen these birds in Pueblo Co., but I once saw a single individual on the plains at about 6,000 feet in Huerfano Co. during June, 1892.

Selasphorus platycercus. BROAD-TAILED HUMMINGBIRD.—Nests regularly in Pueblo Co., usually in scrub oak bushes.

Pica pica hudsonia. AMERICAN MAGPIE.—This variety differs in its habits from the European bird by its excessive noisiness.

Corvus corax sinuatus. WESTERN RAVEN.—Nests regularly in the St. Charles Cañon, Pueblo Co.

Cyanocephalus cyanocephalus. PIÑON JAY.—A common resident in Pueblo and Huerfano Cos., resting in colonies in the piñon trees. When the corn is ripe large flocks do considerable damage.

Molothrus a. ater. COWBIRD.—Common and breeds regularly in Pueblo Co., where the young may be seen yearly fed by Gnatcatchers. It is rather strange that I have never known them to lay their eggs in the nest of any other species though they doubtless do so.

Hesperiphona vespertina montana. WESTERN EVENING GROSBEAK.—Occurs regularly every winter though some years more abundantly than others feeding on the kernels of juniper berries. They frequently remain until quite late in the spring.

Cardinalis cardinalis cardinalis. CARDINAL.—I have a fine male obtained by the late Capt. Ingraham near Beulah, Pueblo Co. Whether it was an escaped bird or not it is impossible to say.

Guiraca caerulea lazula. WESTERN BLUE GROSBEAK.—Nests regularly in the St. Charles Cañon, but never very plentiful.

Calamospiza melanocorys. LARK BUNTING.—During some years these birds nest by countless thousands in Pueblo Co., where their pleasing song and pied plumage must attract the most casual observer. At other times very few are to be seen.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—Scarce in Pueblo Co. I have only seen and taken one specimen.

Bombycilla garrula. BOHEMIAN WAXWING.—Occurs both in Pueblo and Huerfano Cos. The enormous quantities that visit Pueblo Co. during some winters is astonishing, densely packed flocks two miles long and a quarter of a mile wide occur. When a Pigeon Hawk dashes into their midst the sound of their wings must be heard to be appreciated. They feed on juniper berries which grow along the edges of the mesas, and by preference those that have a southern aspect.

Bombycilla cedrorum. CEDAR WAXWING.—A very scarce bird which I have obtained occasionally in the fall in Pueblo Co.

Dendroica townsendi. TOWNSEND'S WARBLER.—In Mr. Drew's excellent paper on Colorado birds published in 'The Auk' in 1885, this species is included in the breeding birds which is doubtless quite correct. In the Wet Mts., Huerfano Co., though I have unfortunately never visited the district early enough to find nests, I have found old birds at the end of the summer together with young, which were no doubt reared there. They frequent the lonely pine forests in company with tits, vireos, nuthatches and other warblers.

Oreoscoptes montanus. SAGE THRASHER.—Curiously I have only noticed these birds in the fall in Pueblo Co., at which season they are very abundant in the juniper country. They are remarkably tame and I have known them to come into my tent for a drink of water.

FURTHER NOTES ON ALABAMA BIRDS.

BY LEWIS S. GOLSAN AND ERNEST G. HOLT.

SINCE the publication of the 'Birds of Autauga and Montgomery Counties, Alabama' (Auk, 1914, pp. 212-235), seven birds have been added to the list and additional observations made which seem worthy of publication. The capture of *Nuttallornis borealis* furnishes the basis of the second published record (to the knowledge of the writers) of this species for the State, Saunders (Auk, 1908, p. 418), publishing the first. It seems too that Avery (American Field, Jan. 3, 1891, p. 8) published the only previous note on *Spinus pinus*; and the present record of the nesting of *Thryomanes bewicki bewicki* probably indicates the southern breeding limit for the species within the State. With one exception, the following notes were made by the senior author.

185. *Gallinula galeata*. FLORIDA GALLINULE.—A specimen, probably injured while in flight by striking a wire or other object, was picked up in a yard in the heart of Montgomery on May 22, 1914. It is preserved in the Museum of the State Department of Archives and History.

186. *Nuttallornis borealis*. OLIVE-SIDED FLYCATCHER.—Male taken in Bear Swamp, Autauga County, October 17, 1915.

187. *Spinus pinus*.—PINE SISKIN.—Ten or fifteen seen near Prattville, April 25, 1914. November 18, 1916, two were taken from a flock of about thirty at Booth.

188. *Passerherbulus henslowi henslowi*. HENSLOW'S SPARROW.—Male taken in wet woods near Autaugaville, March 11, 1915.

Iridoprocne bicolor. TREE SWALLOW.—Fine male taken near Autaugaville, October 3, 1914.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—Now known to breed. May 17, 1914, five heavily incubated eggs were found in a nest of pine needles and trash at end of 6-inch tunnel in ditch bank near Prattville. Tunnel about one foot below top of bank and about nineteen feet above bottom of ditch. May 21, 1916, near Prattville, six eggs (five nearly hatched and one, smaller than others, fresh) were discovered in nest of pine and deciduous leaves at end of 20-inch tunnel in sandy bank near Pine Creek.

189. *Vermivora peregrina*. TENNESSEE WARBLER.—Immature male taken in Bear Swamp, October 17, 1915.

Thryomanes bewicki bewicki. BEWICK'S WREN.—Prattville, Ala.,

March 26, 1916, seven fresh eggs collected from nest of large twigs, lined with cotton, feathers and other soft material, placed in a bucket lying on a shelf in an old blacksmith shop. The nest was completed over 10 days before first egg was laid. Bird was removed from nest by hand so identification is certain.

190. *Troglodytes aëdon parkmani*. WESTERN HOUSE WREN.—A specimen taken February 5, 1916, on Pine Creek near Prattville, and now in the museum of the State Department of Archives and History, was identified by Dr. H. C. Oberholser as this subspecies. Other House Wrens were seen January 14, 1915, and January 8 and October 23, 1916, near Autaugaville.

191. *Hylocichla fuscescens fuscescens*. VEERY.—September 17 and 18, 1915, thirty-five or forty were seen on northern edge of Bear Swamp and two specimens were taken. Others seen October 17 and 22.

ONTARIO BIRD NOTES.

BY HOYES LLOYD.

As most of the notes mentioned below are records of occurrence or breeding of birds near Toronto, it may be of interest to consult a very excellent description of the surrounding country and general topography given by Mr. J. H. Fleming in his 'Birds of Toronto, Ontario,' ('The Auk,' Vol. XXIII).

The following notes are largely the result of personal observations made during ornithological jaunts and collecting work during the past fifteen years. Most of the work has been done at Toronto, Ontario.

I am sincerely indebted to Dr. Jonathan Dwight and Mr. J. H. Fleming for assistance in comparing and describing specimens.

Limosa hæmastica. HUDSONIAN GODWIT.—This species is rare in Ontario and this record may be of interest.

On October 18, 1916, Mr. H. Townson of Toronto shot a specimen at Conroy's Marsh, Carlow Township, Hastings County, Ontario. Mr. A. S. Goss, who was on a hunting trip with Mr. Townson, obtained this speci-

men and gave it to me in the flesh. I found it to be a female in the immature plumage and it is now in my collection, No. 1491.

Corvus corax principalis. NORTHERN RAVEN.—On one of the many lovely lakes in the Temagami Forest Reserve, District of Nipissing, Ontario, a rocky promontory rises rather abruptly from the water level to a height of perhaps one hundred and fifty feet.

As I was paddling past the foot of this cliff on June 9, 1909, a raven flew from the face of the cliff and quickly disappeared in the forest, its flapping and sailing flight identifying it immediately, and, as it flew, it uttered a harsh, guttural croak.

I soon noticed its nest, about fifteen feet from the top of the cliff. It appeared large and coarsely built of sticks, but neatly fastened in a small crevice of the rocks.

Wishing to photograph the nest, I strapped my camera to my waist and was soon climbing over the tumbled rock talis at the foot of the cliff. As I went up, the footing became less secure until finally I was clutching at lichen-covered rocks to cling to the narrow ledges. Finally, an overhanging wall made further progress impossible and I was still far from the nest. So I came down and went around to the top of the cliff, through the woods.

The stone at the top of the cliff was very crumbly, but careful crawling brought me to the edge, within ten or fifteen feet of the raven's nest, where I could look into it easily. At close range it was seen to be carefully built, chiefly of large, dead sticks, and well fitted into the crevice of the cliff. It was warmly lined with willow catkins. Three downy, open-mouthed young ones were crowding each other, in expectation of their next meal, and I secured a good picture of them before descending.

The action of the old birds was always to fly to a distant tree-top to watch me.

By July 14, the young birds were able to fly clumsily from one ledge of the cliff to the next and, later, I saw them taking noisy lessons in woodcraft in the tree-tops of the pine forest near their rocky home.

The Ojibway Indians knew this cliff as Crow Rock and said that the birds had always nested there.

Other families of young and old ravens were seen in the vicinity of similar cliffs on at least two other lakes.

The Raven has long been assumed to nest in Northern Ontario. In this connection, C. W. Nash, in his 'Manual of Vertebrates of Ontario' says "probably breeds in the remote forests towards James Bay." Apparently this is the first published breeding record from Ontario's vast hinterland.

Spinus pinus. PINE SISKIN.—On April 13, 1915, in the early morning, while walking up the ravine of a small creek which flows into the Don River, I noticed a Pine Siskin fly into the top of a small cedar tree. Careful scrutiny of the tree made me believe that there must be a nest, although it could not be seen definitely from the ground. Upon climbing the tree, which was twenty-five to thirty feet high, the nest was found very near

the top and attached to the smaller branches, a short distance out from the main stem of the tree. It was a compact cup, almost spherical below, and was built with twigs as a foundation and the upper part and lining were made of plant fibre. On this date it contained two newly hatched birds and one bird just emerging from the shell. The ground color of this egg was bluish and it was spotted and streaked with dark brown.

I returned to the nesting site on April 23 and the nest had disappeared; perhaps the work of crows, which were numerous. I thought it might have blown down, but could find no trace of it either in the tree or on the ground beneath it.

This nest was located about one mile north of the section of the city known as East Toronto.

On May 20 of the same year, and about a quarter of a mile from the site of this nest, I watched an old Siskin feeding a fully fledged young bird. Their combined notes were something like *wheú-ee*, *whée-you*, *whée-you*, *tuck*, *tuck*, *whéu-ee*, the whole often repeated.

Siskins are reported to have bred in Wellington County, Ontario, in April and May, 1905 (Auk, XXII, 1905, 415), but I believe this is the first nest discovered in this part of the province. As Siskins were seen in this neighborhood quite regularly, from January 28 until May 21, it is probable that several pairs were nesting.

Melospiza melodia melodia. SONG SPARROW.—There is, in my collection, No. 1265, a female Song Sparrow which shows partial albinism. I collected this specimen near Toronto on May 17, 1916. In general appearance it resembles closely a specimen of the Desert Song Sparrow, *Melospiza melodia fallax*, in Mr. J. H. Fleming's collection, with which it was compared. It differs in having the markings uniformly lighter, in having practically white tail-feathers and primaries and in having the beak and feet very light in color.

Song Sparrows were found at Toronto during the present winter, 1916-17.

On December 30, 1916, I found a small flock of half a dozen individuals in the rushes on Ashbridge's Marsh. On January 1, 1917, I found another in a marsh at West Hill, near Toronto.

Piranga erythromelas. SCARLET TANAGER.—In the Don Valley, near Toronto, on May 22, 1915, I took a very peculiar specimen of the Scarlet Tanager. It proved to be a female and its plumage is so odd that I have endeavoured to describe the specimen. Dr. Jonathan Dwight stated, after seeing it, that it was unique, and examination of a large series in Mr. J. H. Fleming's collection showed nothing like it.

It is in my collection, No. 1293.

Ridgway's color standards, 1912, are used in the following description: The under parts are diffused capucine yellow, pinard yellow and buffy olive. The throat, breast and belly are chiefly a mixture of the two yellows, becoming buffy olive on the flanks. The under tail coverts are clear capucine yellow, becoming pinard yellow at the tips. The under wing coverts are white.

The wings and tail are clove brown, edged with citrine above. The upper tail coverts show traces of xanthine orange and the rest of the upper parts are citrine with diffused xanthine orange, becoming bright again on the head.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—The only records for the Rough-winged Swallow at Toronto are given by J. H. Fleming ('The Auk', Vol. XXIV, p. 82). He has a male, taken at Etobicoke, on May 16, 1900, and found a pair at Black Creek, on June 12, 1906.

On May 21, 1915, to the north of East Toronto, I noticed a pair near a small pond. I obtained a male, No. 1306, and a female, No. 1305, and both are now in my collection.

On May 16, 1916, I found another pair near the same place and collected them. One was a male and the other a female. These two birds were presented to the Provincial Museum, Gould Street, Toronto, and are now in the Museum collection.

As this bird is apparently establishing itself further east on the north shore of Lake Ontario, the relative location of the above records is of interest. Etobicoke is thirteen miles west of the point where my four birds were taken, and Black Creek is nine miles west of the same point.

I might say that I was actively engaged in observing and collecting birds to the east of Toronto where the 1915 and 1916 specimens were taken, during the years 1904–1908, and did much work during 1914, but no Rough-winged Swallows were seen. One must assume that none were present and that they arrived to the east of Toronto, in 1915; thus, these two occurrences are, at the present time, the most easterly recorded for Ontario.

Vermivora peregrina. TENNESSEE WARBLER.—A male Tennessee Warbler in my collection, No. 1340, which I took near Toronto on May 13, 1915, is peculiar in that several feathers of the crown have concealed chestnut brown centres of the same color as those in the crown-patch of the Nashville Warbler (*Vermivora rubricapilla*). Thirty-three specimens in the collection of Mr. J. H. Fleming, taken from most parts of the bird's range, have been examined for similar concealed crown-patches, but none were found. Dr. Jonathan Dwight has pronounced this specimen unique.

Dendroica discolor. PRAIRIE WARBLER.—On May 11, 1916, I found a Prairie Warbler in a small patch of woods that bordered the Scarboro Cliffs at a point a half mile east of the city limits. This specimen, which is a male, is now in my collection, No. 1392. Mr. J. H. Fleming records two previous Toronto records ('The Auk', Vol. XXIV, 84).

Seiurus noveboracensis notabilis. GRINNELL'S WATER-THRUSH.—On May 21, 1915, I took a Water-Thrush at Toronto, which Dr. Jonathan Dwight has identified as this species, although not typical. The specimen is in my collection, No. 1398. Mr. J. H. Fleming in 'The Auk' (Vol. XXV, 486–487) records three previous Ontario specimens.

SOME NOTES ON CONNECTICUT BIRDS.

BY IRA N. GABRIELSON.

DURING 1916, while in Connecticut engaged in work for the Biological Survey, the writer made a number of notes on the birds of the State. These notes have been compared with the data found in the state list¹ and such as seem to be of interest are presented here.

The notes presented are either records of species which are uncommon in the state or unusual dates for common birds. All specimens mentioned are now in the collection of the Biological Survey, unless otherwise specified.

I am indebted to many friends for courtesies received during the season and particularly to those mentioned in the following notes as companions in the field. I wish especially to express my appreciation of the kindness shown to me by Dr. Louis B. Bishop.

1. *Colymbus holboëlli*. HOLBÖELL'S GREBE.—Wilbur F. Smith and I saw Holboëll's Grebe on April 15 at Norwalk. This bird was feeding a short distance off shore and the markings were plainly visible through the glasses. Mr. Smith informed me that a live bird of this species was captured and brought to him on April 20 just after I had left Norwalk.

2. *Gavia immer*. LOON.—One observed at Norwalk on October 27 by A. A. Saunders and myself. This seems to be an early date.

3. *Larus argentatus*. HERRING GULL.—No summer records are given in the 'Birds of Connecticut.' Several ornithologists informed me that Herring Gulls were becoming more common and occasionally remained during the summer. I have the following dates for the summer months: Norwalk, May 31, a number over the harbor; Old Lyme, June 12, a flock of considerable size about the mouth of the Connecticut River; Norwalk, July 10, a single bird over the harbor. I left the shore on July 14 and did not return again until after the Gulls became common in fall and consequently cannot say whether any were about during late July or early August.

4. *Larus delawarensis*. RING-BILLED GULL.—On April 11 at Greenwich, Wilbur F. Smith and I saw a number of Gulls in immature plumage which I am positive were Ring-billed Gulls. We watched them at close range for a long time. They were distinctly smaller than the Herring Gulls associated with them and the subterminal black band on

¹ The Birds of Connecticut, by J. H. Sage, L. B. Bishop and W. P. Bliss.

the tail was plainly visible. On April 12 I saw them again over Norfolk Harbor. On September 13 one of these birds was collected on the Housatonic River by Mr. Smith. I saw this specimen at the Bird Craft Sanctuary Museum at Fairfield. Since my return to Washington, Mr. Smith has sent me a second specimen taken by a hunter on the Housatonic River, December 11. This bird has been identified by H. C. Oberholser.

5. *Larus atricilla*. LAUGHING GULL.—Ten were noted along the beach near Stonington on August 21, and a single bird over Norwalk Harbor, August 26. Mr. Smith has specimens collected on the Housatonic River, September 13, 1916.

6. *Sterna hirundo*. COMMON TERN.—Six common Terns were seen and one was collected at the mouth of the Connecticut River on June 12. Others were noted at Norwalk on May 31 and August 26.

7. *Hydrochelidon nigra surinamensis*. BLACK TERN.—A single Black Tern in full spring plumage was seen among the Norwalk Islands on May 24. I watched this bird at short range for some time and later both Mr. Smith and I saw it again. No effort was made to collect the bird as I was at that time unaware of the lack of spring records for the State.

8. *Oceanites oceanicus*. WILSON'S PETREL.—"No specific records of this species" is the statement made regarding the Wilson's Petrel on page 26 of 'The Birds of Connecticut.' Since the publication of this work at least two specimens have been taken. Mr. Wilbur F. Smith collected one on August 7, 1914, off Norwalk Harbor. I am informed that this specimen is now in the collection of the Connecticut Commissioners of Fisheries and Game. I accompanied Mr. Smith to the same locality on June 30, 1916, and secured a second specimen.

9. *Oidemia americana*. SCOTER.—On April 17, Mr. Smith and I saw about twenty of this species among the Norwalk Islands feeding with a large flock of White-winged Scoters. The birds were observed at short range and I am positive of the identification.

10. *Branta canadensis canadensis*. CANADA GOOSE.—A flock of about two hundred were seen at Greenwich on April 11. Mr. Smith informed me that the flock wintered at this place. At this time they were very tame and only swam slowly away as we approached.

11. *Ixobrychus exilis*. LEAST BITTERN.—Mr. Smith and I saw one in the marshes at the mouth of the Housatonic River on June 28. Two were seen at South Windsor on July 16 and one on August 1. C. W. Vibert who was with me stated that they had been there for some time.

12. *Porzana carolina*. SORA.—Additional spring records. I flushed one out of a small swamp at South Windsor on May 8. Also flushed a bird at Norwalk on May 24.

Summer records. At South Windsor, July 15 and Glastonbury July 28 birds were seen. In addition the familiar cry of this species was often heard during the evenings in the extensive marshy hay lands about these two places. It is probable that they still breed here.

13. *Tringa canutus*. KNOT.—On May 24 Mr. Smith and I spent

about an hour among the Norwalk Islands looking over a great flock of migrating shorebirds. While we were watching a flock of small Sandpipers a Knot alighted within thirty yards and remained as long as we cared to look at it.

14. ***Pisobia fuscicollis***. WHITE-RUMPED SANDPIPER.—Two were noted in the flock of shorebirds on the Norwalk Islands, May 24.

15. ***Bartramia longicauda***. UPLAND PLOVER.—C. W. Vibert, of South Windsor, informed me that a pair of Upland Plover regularly spent the summer on the meadows near his home. He conducted me to the place on May 8 and we saw one bird. On July 15 two were noted in the same locality.

16. ***Oxyechus vociferus***. KILLDEER.—I saw the Killdeer on the following dates: Norwalk, April 13, May 20, August 24 and 25 and October 27; South Windsor, May 8, July 16, and August 1; Fairfield, October 2. On August 24 four were seen feeding in a pasture near the salt marshes and on August 25 ten at the same spot. The other records were of single birds or pairs.

17. ***Arenaria interpres morinella***. RUDDY TURNSTONE.—A number of Turnstones were present in the flock on the Norwalk Islands on May 24. On May 31 one individual was noted feeding along the shore of Norwalk Harbor. This bird was very tame and allowed me to approach within ten yards before it flew.

18. ***Haliaeetus leucocephalus leucocephalus***. BALD EAGLE.—One noted flying over Fourteen Acre Pond at Norwalk on May 20 and a second seen feeding on dead fish along the edge of the same pond on September 26.

19. ***Pandion haliaetus carolinensis***. OSPREY.—Mr. Arthur W. Brockway and I saw two occupied nests at the mouth of the Connecticut River on June 12.

20. ***Melanerpes erythrocephalus***. RED-HEADED WOODPECKER.—One taken May 12 at Norwalk.

21. ***Empidonax virescens***. ACADIAN FLYCATCHER.—A pair of these small flycatchers were observed daily about a little swamp at Norwalk from May 15 to 18. On the 18th one was collected for identification. Others were noted at the same place on May 20.

22. ***Otocoris alpestris alpestris***. HORNED LARK.—Early record: one, collected out of a flock of three on October 27 at Norwalk, was too badly shot to make a skin.

23. ***Hesperiphona vespertina vespertina***. EVENING GROSBEAK.—On May 3 Lewis W. Ripley of Glastonbury informed me that he had seen a flock of Evening Grosbeaks in a small swamp near East Hartford. I accompanied him to this place on May 4 and found a flock of about fifteen birds three of which were collected. I saw birds of this same flock on May 5 and a single bird in a nearby swamp on May 8.

24. ***Zonotrichia leucophrys leucophrys***. WHITE-CROWNED SPARROW.—One collected from a flock of English Sparrows in a barnyard near

Hartford on May 4. This specimen is in the Athenæum collection at Hartford. A single bird was noted at West Hartford, on May 7; and another at Norwalk May 15.

25. **Melospiza lincolni lincolni.** LINCOLN'S SPARROW.— One taken at South Windsor on May 8.

26. **Iridoprocne bicolor.** TREE SWALLOW.— Summer record: two noted by Mr. Brockway and myself at Old Lyme on June 12.

27. **Riparia riparia.** BANK SWALLOW.— Early record: one taken on April 18 at Norwalk out of a flock of Barn and Tree Swallows.

28. **Lanius ludovicianus migrans.** MIGRANT SHRIKE.— I saw one at Norwalk on October 2 and a second at the same place on October 27. (With A. A. Saunders.)

29. **Mniotilta varia.** BLACK AND WHITE WARBLER.— Early record: one recorded by A. A. Saunders and myself April 21 at New Haven.

30. **Helmitheros vermivorus.** WORM-EATING WARBLER.— One taken at Norwalk on May 15. Others noted at Norwalk on May 20 and August 25 and one at Hadlyme June 11.

31. **Vermivora peregrina.** TENNESSEE WARBLER.— One individual noted on each of the following dates: Norwalk, May 12, 21 and 26; Wilton, May 20.

32. **Dendroica tigrina.** CAPE MAY WARBLER.— A. G. Powers and I saw eight Cape May Warblers in Hartford on May 7. I saw four and collected two while tramping with Mr. Vibert at South Windsor on May 8. One noted at Norwalk May 16.

33. **Dendroica coronata.** MYRTLE WARBLER.— Late spring record: May 24 at Norwalk.

34. **Dendroica castanea.** BAY-BREASTED WARBLER.— The Bay-breasted Warbler was very common from May 19 to May 21 in Norwalk and vicinity. There were numbers of them again on May 26-27, although they were not so abundant as on the previous dates.

Earliest record for the season, May 8 at South Windsor (with C. W. Vibert).

35. **Dendroica vigosii.** PINE WARBLER.— Norwalk April 14 and 15; New Haven April 21; South Windsor July 16 (with C. W. Vibert).

36. **Wilsonia citrina.** HOODED WARBLER.— At Wilton on May 27 I saw a number of singing males and collected one. Mr. Godfrey who was with me at the time stated that they bred regularly there. At Hadlyme on June 11 Mr. Arthur W. Brockway took me to see two nests of this species which he had previously found.

37. **Wilsonia canadensis.** CANADA WARBLER.— On June 10 when I reached Hadlyme, Mr. Brockway informed me that he had taken the nest and eggs of the Canada Warbler the previous day. On June 11 we visited the spot where he had taken the nest and found the pair still about.

38. **Thryothorus ludovicianus ludovicianus.** CAROLINA WREN.— A Carolina Wren appeared in the yard of St. Paul's Church, at Norwalk, on September 26 and was noted daily until October 7.

39. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN.—One taken at South Windsor May 6. Others were noted at South Windsor on July 15–16 and August 1. C. W. Vibert informed me that this little colony had been there for several years.

40. *Sitta canadensis*. RED-BREASTED NUTHATCH.—Late record: one female taken at Norwalk, on May 15.

41. *Vermivora lawrencei*. LAWRENCE'S WARBLER.—On May 20 I went on a trip to Wilton with the Norwalk Bird Club. Mr. Smith and Mr. Hall found a Lawrence's Warbler and called the rest of us to see it. The bird was very tame and remained in some low bushes for some time while the entire party gathered about to watch it.

42. *Vermivora leucobronchialis*. BREWSTER'S WARBLER.—One seen in Norwalk in some bushes by the roadside on May 26.

NOTES ON NORTH AMERICAN BIRDS.

III.

BY HARRY C. OBERHOLSER.

THIS article is a continuation of the author's remarks on various North American birds.¹ In the following pages there are notes on two genera, one species, and two subspecies. For the loan of certain specimens used, the writer is indebted to Dr. L. C. Sanford.

Bannermania Mathews and Iredale.

The genus *Bannermania* has recently been proposed² as a monotypic group for the reception of *Oceanodroma hornbyi* (Gray).³ Examination of recently collected material of this species has offered

¹ For the preceding papers of this series, see 'The Auk,' XXXIV, April, 1917, pp. 191–196; and XXXIV, July, 1917, pp. 321–329.

² Mathews and Iredale, *Ibis*, ser. 10, III, No. 3, July, 1915, p. 578.

³ *Thalassidroma Hornbyi* Gray, *Proc. Zool. Soc. Lond.*, 1853 (July 25, 1854), p. 62 (north-west coast of America).

an opportunity to determine the validity of the characters adduced for this separation. In the type specimen the wing formula is said by Messrs. Mathews and Iredale to differ from that of the other species of *Oceanodroma* in having the first (outermost) primary equal to the third, and much longer than the fourth. In one specimen we have examined, the first primary is very much shorter than the third and also decidedly shorter than the fourth. A similar discrepancy in the relative length of the primaries occurs in other species of *Oceanodroma*, such as *Oceanodroma furcata* and *Oceanodroma leucorhoa*, in which species the first is sometimes longer, occasionally shorter, than the fourth. From these facts we must conclude that the proportion of the primaries in birds of this group is of no value as a generic character. The tarsus in *Oceanodroma hornbyi* is almost exactly equal to the middle toe with claw, and is thus of the same proportions as in *Oceanodroma leucorhoa*. The wings and tail are like those of *Oceanodroma leucorhoa*, and some of the tail-feathers are slightly scalloped at their tips, as is not infrequently the case in *Oceanodroma leucorhoa*, and commonly and most noticeably so in *Oceanodroma furcata*. The bill seems to be rather slender and relatively long, but in this respect it is practically equalled by some specimens of *Oceanodroma leucorhoa* and other species. In coloration this species is very different from all the other forms of the genus *Oceanodroma*, but since it seems to possess no peculiar trenchant structural characters, its generic separation on the ground of coloration alone seems to be unwarranted, and its name should, therefore, remain *Oceanodroma hornbyi*.

This species is at present relegated to the hypothetical list of North American birds, on the ground that the alleged locality, "northwest coast of America," is doubtful. Since, however, it is known that Admiral Hornby, who obtained the type specimen during the period of his command on the Pacific Station, had his headquarters on Vancouver Island, British Columbia, there seems to be no reasonable doubt of the correctness of the locality. In view of these facts, the species should be restored to a place in the regular list of North American birds.

Cymochorea Coues.

The subgenus *Cymochorea* Coues¹ has recently been raised to generic rank to include all the species now under *Oceanodroma* Reichenbach, except the type of the latter, *Oceanodroma furcata* (Gmelin).² A careful examination of the species of *Oceanodroma* discloses the fact that there is no structural distinction between *Oceanodroma furcata* and the other species of the genus, with exception of the slightly scalloped tips of the rectrices and the rather narrower ends of the outer pair. Furthermore, these peculiarities are indicated in some specimens of *Oceanodroma leucorhoa* and *Oceanodroma hornbyi*, though never developed to so great a degree as in *Oceanodroma furcata*. Moreover, the difference in color between *Oceanodroma furcata* and the remaining species now included in the group is scarcely deserving of weight in generic separation, in view of the fact that species of such diverse coloration as members of the genus *Puffinus* and its closely allied groups have been by previous authors, as well as by Messrs. Mathews and Iredale, and we think properly, placed in the same genus. In this particular case it seems to us that neither the slight and not wholly constant structural character of the rectrices, nor the somewhat different coloration is sufficiently important to entitle *Cymochorea* Coues to generic rank; and it, therefore, should remain, as at present, a subgenus of *Oceanodroma*.

Sula dactylatra californica Rothschild.

This new subspecies was recently described by Dr. Walter Rothschild³ from San Benedicto Island, in the Revillagigedo group, off the coast of western Mexico. Its geographic range was given by the original describer as the "coasts of California and Central America," but without any definite localities outside the Revillagigedo Islands. Since, therefore, there is no evidence that this new race has ever been taken in either California or Lower Cali-

¹ *Cymochorea* Coues, Proc. Acad. Nat. Sci. Phila., 1884, p. 75 (type by original designation, *Procellaria leucorhoa* Vieillot).

² Cf. Mathews and Iredale, Ibis, ser. 10, III, No. 3, July, 1915, pp. 574-581.

³ Bull. Brit. Ornith. Club, XXXV, No. CCIII, January 27, 1915, p. 43.

fornia, we must, notwithstanding the implication contained in the subspecific term "*californica*," exclude it from the list of North American birds.

***Fregata aquila* Linnæus.**

The name *Fregata aquila* Linnæus,¹ under which the frigate bird of North America has heretofore passed, now proves to be applicable only to the bird of Ascension Island in the South Atlantic Ocean.² The bird of the West Indies, and therefore of the southeastern United States, thus left without a name, Mr. Mathews proposed to call *Fregata minor minor* Gmelin,³ by fixing the type locality of the latter as the West Indies.⁴ Dr. Walter Rothschild has shown, however, that the type locality of *Pelecanus minor* Gmelin is undoubtedly in the Eastern Hemisphere, and he has restricted it to the eastern half of the Indian Ocean.⁵

For the West Indian bird Dr. Rothschild uses the name *Fregata magnificens* Mathews, which he considers a species distinct from *Fregata minor* Gmelin, although originally described as a subspecies of the latter.⁶ Mr. Mathews, however, still maintaining the West Indian bird to be different from *Fregata magnificens magnificens* of the Galapagos Islands, called it provisionally *Fregata minor rothschildi*, so that in case Dr. Rothschild should prove to be correct in the shifting of the type locality from the West Indies to the Indian Ocean, the West Indian bird would be provided with a name.⁷ All the specimens of *Fregata* that the present writer has been able to examine from the West Indies are undoubtedly specifically identical with *Fregata magnificens* Mathews, and are likewise specifically distinct from *Fregata minor* Gmelin. Mr. Mathews

¹ *Pelecanus aquilus* Linnæus, Syst. Nat., ed. 10, I, 1758, p. 133.

² Mathews, Austral Avian Record, II, No. 6, December 19, 1914, pp. 117-118; Rothschild, Novit. Zool., XXII, February 12, 1915, pp. 145-146.

³ *Pelecanus minor* Gmelin, Syst. Nat., I, ii, 1789, p. 572.

⁴ Austral Avian Record, II, No. 6, December 19, 1914, p. 118; Birds Australia, IV, part 3, June 23, 1915, pp. 240-281.

⁵ Novit. Zool., XXII, February 12, 1915, p. 145.

⁶ *Fregata minor magnificens* Mathews, Austral Avian Record, II, No. 6, December 19, 1914, p. 120 (Barrington, Indefatigable, and Albemarle islands, Galapagos Islands); Birds Australia, IV, part 3, June 23, 1915, p. 269 (type said to be from Culpepper Island, Galapagos Islands).

⁷ *Fregata minor rothschildi* Mathews, Birds Australia, IV, part 3, June 23, 1915, p. 280 (Aruba Island, Caribbean Sea).

is, however, correct in saying that the West Indian birds differ from *Fregata magnificens* of the Galapagos Islands, since they average much smaller, particularly in length of wings and tail; but this difference is clearly not specific, as the extreme measurements overlap in the two forms. The possibility that there are really two distinct species in the West Indies is suggested by Mr. Mathews' remarks and his contention that the West Indian bird is a subspecies of *Fregata minor*; but, until this be proved, the bird of the West Indies, Caribbean Sea, the Gulf of Mexico, and the coasts of the southeastern United States must be called *Fregata magnificens rothschildi* Mathews.

The frigate bird of the central Pacific Ocean has recently been separated from that of the Indian Ocean by Mr. Mathews¹ as *Fregata minor palmerstoni* (Gmelin).² Birds from the coasts of California and Lower California belong clearly to this race, which we therefore should add to our North American list.

Thus, for North America, we shall have two species, instead of the single *Fregata aquila* Linnæus: an Atlantic form, *Fregata magnificens rothschildi* Mathews, and a Pacific bird, *Fregata minor palmerstoni* (Gmelin).

***Bubo virginianus wapacuthu* (Gmelin).**

The name *Strix wapacuthu* Gmelin³ was some time ago employed by the writer⁴ for the Arctic Horned Owl, *Bubo arcticus* Swainson. Subsequently Mr. William Brewster questioned this identification,⁵ and referred this name as a synonym to *Nyctea nyctea*. Mr. Ridgway has recently⁶ again revived *Bubo virginianus wapacuthu* (Gmelin), and used it for the Arctic Horned Owl in place of *Bubo virginianus subarcticus* Hoy, or *Bubo virginianus arcticus* Swainson,

¹ Austral Avian Record, II, No. 6, December 19, 1914, p. 119; Birds Australia, IV, part 3, June 23, 1915, p. 280.

² *Pelecanus Palmerstoni* Gmelin, Syst. Nat., I, ii, 1789, p. 573 (Palmerston Island, Pacific Ocean).

³ Syst. Nat., I, i, 1788, p. 291 (Hudson Bay).

⁴ Proc. U. S. Nat. Mus., XXVII, 1904, pp. 191-192.

⁵ Mem. Nutt. Orn. Club, IV, 1906, p. 205.

⁶ Bull. U. S. Nat. Mus., No. 50, part VI, April 8, 1914, p. 751.

which latter Dr. C. W. Richmond had shown to be preoccupied.¹ In view of this recent action of Mr. Ridgway's, the writer has taken pains to go over the matter again; and the result of this investigation seems fully to substantiate Mr. Brewster's position. The name *Strix wapacuthu* Gmelin was based on the "wapacuthu owl" of Pennant,² hence the identification of his description must determine the identity of Gmelin's name. While Pennant's description superficially suggests the Arctic form of *Bubo virginianus*, a careful reading shows that the bird described must be the Snowy Owl, *Nyctea nyctea*. In addition to other details, including the fact that Pennant's bird is specifically said to be without ears, the statements that the bill is glossy black, and that the "space between the eyes, cheeks, and throat" is "white; the ends of the feathers on the head black," clearly show that the description could not apply to any form of *Bubo virginianus*, but must refer to *Nyctea nyctea*. In view of this, the proper name for the Arctic Great Horned Owl should remain *Bubo virginianus subarcticus* Hoy.

¹ Proc. Biol. Soc. Wash., XV, 1902, p. 86.

² Arctic Zool., II, 1785, p. 231.

NOTES ON THE GENUS PUFFINUS BRISSON.

BY HARRY C. OBERHOLSER.

THE genus *Puffinus* Brisson, as currently recognized, has recently been separated by Messrs. Mathews and Iredale into a number of generic groups.¹ The present writer, in connection with other work on the Biological Survey collection, in the United States National Museum, has had occasion to investigate the generic status of the various shearwaters of the genus *Puffinus*, consequently to review the classification adopted by Messrs. Mathews and Iredale; and the results of this study may be worth placing on record, particularly in so far as they affect the species found in North America.

The new genus *Calonectris*,² proposed for *Puffinus leucomelas* Temminck and *Puffinus kuhlii* Boie, appears to be well characterized by its large, robust bill, prominent nasal tubes, rather stout and somewhat abbreviated tarsi.

The genus *Ardenna* Reichenbach,³ revived to include *Puffinus gravis* (O'Reilly) and *Puffinus creatopus* Coues, seems to be sufficiently different from true *Puffinus*, by reason of its more prominent nostrils and relatively, as well as actually, larger and heavier dertrum.

The proposed genus *Hemipuffinus*,⁴ with its relatively short, heavy bill and prominent nostrils, looks very different from the typical species of *Ardenna*, but is so intimately connected with *Ardenna gravis* by individual variation of *Ardenna creatopus* that the difference between the two supposed groups is thus completely bridged; and *Hemipuffinus*, with its single species, must be merged with *Ardenna*. It may, however, be retained as a subgeneric group.

The genus *Thyellodroma* Stejneger,⁵ revived by Mathews and

¹ Austral Avian Record, II, 1913-1914, pp. 12, 20, 110; *Ibis*, ser. 10, III, No. 3, July, 1915, pp. 582-604.

² Mathews and Iredale, *Ibis*, ser. 10, III, No. 3, July, 1915, p. 586 (type by designation [p. 592], *Puffinus leucomelas* Temminck).

³ Natürl. Syst. Vögel, 1852, p. IV (type by monotypy, *Procellaria major* Faber, = *Procellaria gravis* O'Reilly).

⁴ Iredale, Austral Avian Record, II, No. 1, August 2, 1913, p. 20 (type, by original designation, *Puffinus carneipes* Gould).

⁵ Proc. U. S. Nat. Mus., XI, November 8, 1888, p. 93 (type by original designation, *Puffinus sphenurus* Gould).

Iredale for *Puffinus cuneatus* Salvin, *Puffinus bulleri* Salvin, and *Puffinus chlororhynchus* Lesson, is, by reason of its long, wedge-shaped tail and heavy, anteriorly more truncate nasal tubes, held by us to be sufficiently distinct from typical *Puffinus*.

The genus *Alphapuffinus* was proposed for *Puffinus assimilis* by Mr. Mathews,¹ and later extended to include also *Puffinus lherminieri* Lesson, and *Puffinus persicus* Hume. The characters given for this separation were the slenderer bill and more open nostril of *Alphapuffinus*. Examination of the species thus included and comparison with the species of true *Puffinus* show that these differences are merely individual variations, and do not form a basis for even subgeneric division. It is necessary, therefore, to synonymize *Alphapuffinus* Mathews with *Puffinus* Brisson.

The case of *Neonectris* Mathews² is a little different from that of *Alphapuffinus*. Messrs. Mathews and Iredale included in this group *Puffinus tenuirostris tenuirostris* (Temminck), *Puffinus tenuirostris breviceaudus* Gould, and *Puffinus griseus* (Gmelin). Of these forms, *Puffinus tenuirostris breviceaudus* is most different from *Puffinus puffinus*, the type of the genus *Puffinus* Brisson, and at first sight seems to be well differentiated generically; but by individual variation it intergrades completely through *Puffinus tenuirostris tenuirostris* and *Puffinus griseus*; in fact, some specimens of *Puffinus griseus*, in so far as their structural characters are concerned, might be placed either in the *Puffinus tenuirostris breviceaudus* group or with *Puffinus puffinus*. In view of these facts it is quite impossible to recognize the genus *Neonectris* as distinct from *Puffinus*. Indeed, it is unsatisfactory as even a subgeneric division.

***Puffinus couesi* Mathews.**

In the treatment of the genus *Puffinus* in Mathews' 'Birds of Australia,' there is an extended discussion of the nomenclature and relationships of *Puffinus opisthomelas* Coues and *Puffinus auricularis* Townsend.³ The author, from studying the original

¹ Austral Avian Record, II, No. 5, September 24, 1914, p. 110 (type by original designation and monotypy, *Puffinus assimilis* Gould).

² Austral Avian Record, II, No. 1, August 2, 1913, p. 12 (type by original designation, *Puffinus breviceaudus* Gould).

³ Mathews, Birds Australia, II, part 1, May 30, 1912, pp. 65-67.

descriptions of these two species, apparently without examining the type of either, comes to the conclusion that *Puffinus auricularis* and *Puffinus opisthomelas* are identical and that both refer to the bird from the Revillagigedo Islands, Mexico (*Puffinus auricularis* Townsend). He therefore renames the *Puffinus opisthomelas* of Coues and subsequent authors, with the following basis: "the species described but not figured in the *Monograph of the Petrels* (pp. 109 *et. seq.*) under the name of *Puffinus opisthomelas* Coues, and of which Anthony (Auk, Vol. XVII, p. 247, 1900) notes: 'extremely plentiful off the coast of California during the summer months, breeding rather commonly on Guadaloupe [sic], San Benito Islands, and Natividad Island.'"

An examination, however, of the types of *Puffinus opisthomelas* Coues¹ and *Puffinus auricularis* Townsend,² as well as a comparison of both with material from Monterey, other parts of California, and from Lower California, at once discloses the fact that these types clearly represent the two distinct species with which current authors have identified them, and that, furthermore, these types typify the characters of the two species. The bird from Clarion Island, Revillagigedo Islands, western Mexico, *Puffinus auricularis* Townsend, differs from *Puffinus opisthomelas* Coues in its much more blackish upper surface, shorter, more blackish bill, smaller feet, and usually pure white axillars. The figure of *Puffinus opisthomelas* in Godman's 'Monograph of the Petrels'³ does not represent a typical California bird, yet a specimen in the United States National Museum from Monterey Bay, California (No. 191015, U. S. N. M.), very closely matches it in color. While this specimen is unusually dark, there is much individual variation in the coloration of the upper parts, and the type of *Puffinus opisthomelas* Coues, possibly in part on account of its age, is the palest specimen of our series! It is thus very evident that *Puffinus couesi* Mathews becomes a synonym of *Puffinus opisthomelas* Coues, and that the latter name remains the proper designation of this species. Also the name *Puffinus auricularis* Townsend must be continued for the species to which it has always been applied.

¹ *Puffinus opisthomelas* Coues, Proc. Acad. Nat. Sci. Phila., 1864, p. 139 (Cape San Lucas, Lower California).

² *Puffinus auricularis* Townsend, Proc. U. S. Nat. Mus., XIII, Sept. 9, 1890, p. 133 (Clarion Island, Revillagigedo Islands, Colima, Mexico).

³ Godman, Monograph Petrels, part 2, March, 1908, pl. 30.

***Puffinus cuneatus* Salvin.**

Mr. G. M. Mathews, in his 'Birds of Australia',¹ considered *Puffinus cuneatus* Salvin a subspecies of *Puffinus chlororhynchus* Lesson, or, as he calls it, *Puffinus pacificus* (Gmelin). He also described a bird from San Benedicto Island, Revillagigedo Islands, State of Colima, Mexico, as *Puffinus pacificus alleni*,² which Dr. Witmer Stone entered in the first annual list of proposed changes in the A. O. U. Check-List of North American Birds as a substitute for the *Puffinus cuneatus* of North America. More recently Messrs. Mathews and Iredale have reverted to the previous view of authors that *Puffinus cuneatus*, the white-breasted bird, and *Puffinus chlororhynchus* (*Puffinus pacificus* [Gmelin]), the dark-bodied bird, are distinct species, instead of mere color phases or geographic races. This view is probably correct, although this difficult question is by no means finally settled. Such an arrangement leaves, according to Mathews and Iredale, only two described subspecies under *Puffinus cuneatus*, viz.: *Puffinus cuneatus cuneatus* Salvin, from the Marshall, Bonin, and Pescadores Islands, and *Puffinus cuneatus laysani* Mathews from Laysan Island in the Hawaiian group. On San Benedicto Island off the western coast of Mexico occur both light and dark birds, and the *Puffinus pacificus alleni* of Mathews belongs to the dark species, *Puffinus pacificus*; while the light bird of this island, if subspecifically distinct from that of the Hawaiian Islands, is apparently unnamed.

Mr. Mathews, in describing his *Puffinus pacificus laysani*,³ from Laysan Island, Hawaiian Islands, based his distinction on the lighter color of the Laysan birds compared with the typical form from the Marshall Islands. Later Messrs. Mathews and Iredale asserted the absolute identity of birds from Bonin Island with the type of *Puffinus cuneatus* Salvin from Krusenstern Island in the Marshall archipelago.⁴ Although the writer has not been able to examine specimens from the Marshall Islands, he has had available birds from the Bonin Islands, and a good series from both Laysan Island and other Hawaiian Islands, including the type of *Puffinus*

¹ Birds Australia, II, part 1, May 30, 1912, pp. 82-84.

² Birds Australia, II, part 1, May 30, 1912, p. 83.

³ Birds Australia, II, part 1, May 30, 1912, p. 83.

⁴ Ibis, ser. 10, III, No. 3, July, 1915, pp. 597-599.

knudseni Stejneger.¹ A careful comparison of this material reveals no characters for the recognition of a subspecies from the Hawaiian Islands or from Laysan, since the chief difference mentioned by Mr. Mathews as characterizing his *Puffinus pacificus laysani*, its paler upper parts, is not at all borne out by the present specimens, some of the examples from Laysan and the other Hawaiian Islands being much darker than the Bonin Islands bird. Furthermore, there is absolutely no difference between the light-breasted *Puffinus pacificus laysani*, described by Mr. Mathews from Laysan Island, and *Puffinus knudseni* Stejneger, from Kauai Island; hence, were the Hawaiian bird subspecifically distinguishable, it should bear the name *Puffinus cuneatus knudseni* Stejneger. The identity, however, of the Hawaiian Islands bird with true *Puffinus cuneatus* leaves the bird occurring in North America without a distinctive subspecific name, and we must, therefore, revert for its technical designation to *Puffinus cuneatus*; or, rather, since this species is generically different from the typical species of the genus *Puffinus* Brisson, we should call it *Thyellodroma cuneata* (Salvin).

In view of the changes indicated in the present paper, the North American species now included in the genus *Puffinus* will stand as follows:

- Calonectris kuhlii borealis*** (Cory).
- Ardenna carneipes*** (Gould).
- Ardenna creatopus*** (Coues).
- Ardenna gravis*** (O'Reilly).
- Thyellodroma cuneata*** (Salvin).
- Thyellodroma bulleri*** (Salvin).
- Puffinus tenuirostris tenuirostris*** (Temminck).
- Puffinus griseus chilensis*** Bonaparte.
- Puffinus griseus stricklandi*** Ridgway.
- Puffinus puffinus puffinus*** (Brünnich).
- Puffinus puffinus bermudæ*** Nichols and Mobray.
- Puffinus opisthomelas*** Coues.
- Puffinus auricularis*** Townsend.
- Puffinus lherminieri lherminieri*** Lesson.
- Puffinus assimilis baroli*** Bonaparte.

¹ *Puffinus knudseni* Stejneger, Proc. U. S. Nat. Mus., XI, November 8, 1888, p. 93 (Kauai Island, Hawaiian Islands).

GENERAL NOTES.

Man-o'-War-bird etc. on the North Carolina Coast.—I have a letter from Mr. Russell J. Coles at the Bight of Cape Lookout, North Carolina, dated July 19, 1917, enclosing excellent photographs of a juvenile Man-o'-War-bird (*Fregata aquila*) in which he says: "On July 10, I and members of my crew watched for some time a Man-o'-War-bird attempting to fly against a heavy wind squall. The bird appeared very much exhausted as it came in from the sea against the wind. . . . At last, one of my crew struck at it and in dodging the blow, the bird fell in the sea alongside and was lifted into the boat. I kept it on board for half a day and, although at first it was too weak to show the usual aggressive spirit of its species, yet when rested it became very pugnacious and struck at all who approached it with beak and wings.

"Finally I released it after measuring and photographing, and it flew swiftly away to the south. From tip to tip of wings, it measured 7 ft. 4 in. which was wider than examples I have measured on Gulf coast of Florida. This is my first observation of this species as far north as this, and native fishermen do not recall having seen one here before.

"During the past five weeks, I have seen three flocks of Brown Pelicans [*Pelecanus occidentalis*] here, one a flock of twelve rested on the water just off point of Cape Lookout for thirty minutes on June 15."

Under date of July 27, Mr. Coles writes again from the same locality:

"Since my last letter to you, I have seen one small flock of eight, and one of nine Brown Pelicans; both flocks flying south. Then one lone Pelican remained half a day near my boat feeding in the Bight. Ten years ago, I saw only one Least Tern or "Striker" [*Sterna minima*] on about August 1st. Since then their numbers have increased each year, and I can now see 20 or 30 in a day."

The Man-o'-War-bird is a stray on the North Carolina coast, and the status there of Pelican and Least Tern is of interest.—J. T. NICHOLS, New York, N. Y.

Gadwall in Massachusetts.—Mr. Harry P. Sturtevant reports the capture at Nippinicket Pond, Bridgewater, Massachusetts, upon October 11, 1916, of two Gadwalls (*Chaulelasmus streperus*).—ARTHUR C. DYKE, Bridgewater, Mass.

Bittern (*Botaurus lentiginosus*) in a Phenomenal Position at Boston, Mass.—Upon entering the Public Garden about seven A. M. on March 25, 1917, while my eyes were turned in a somewhat different direction, I was conscious of a large bird rising from a grass plot at my right. This bird by a flight of about two hundred feet alighted in a large cottonwood tree which stands beside the pond within the Garden, taking a perch

forty feet or thereabouts above the ground. There it remained for full observation, assuming the statuesque attitude peculiar to the Bittern, neck, head, and bill in a straight line pointing up into the sky, and remaining motionless. Relying on its sense of self-concealment in such an attitude when in a marsh or swamp, this bird in the tree placed its reliance, as is its wont, on maintaining this attitude, and did so throughout the day. I remained in the Garden until 8.30, and when I came away the bird had changed neither position nor attitude from those assumed when it took its perch. Other observers' attention was called to this phenomenon, as I met them. And during both forenoon and afternoon friends, to whom I mentioned the occurrence at the breakfast table and who later visited the Garden, found the bird in the same position and attitude at different hours of the day. It was not concerned or disturbed upon observers' near approach to the tree or even standing directly under it, and as the tree is beside one of the principal paths of the Garden, there were passersby throughout the day. The Bittern took advantage of night, doubtlessly, to seek a more congenial location, for it was not present the following morning.

The date of this occurrence was by six days earlier than the earliest record of Bittern in Howe and Allen's 'Birds of Massachusetts,' which is March 31, 1894, when Dr. Walter Faxon observed one in the Cambridge Region (Brewster). The conditions were still wintry, although the breaking up had extended well toward the first springlike stage which really appeared two days later, when the ice was mostly gone from the pond and the earth had loosened from the grip of frost. As to the perch in the tree taken and maintained with full assurance of self-concealment, life-long ornithologists here, such as Mr. William Brewster and Dr. Charles W. Townsend, state that they have never seen a Bittern perching in a tree or bush. Dr. Townsend, however, writes me, "One day last summer at Ipswich in a rain storm I saw a Bittern standing on top of a small haystack near my house. He presented a curious and unusual appearance, and I made a note of it." And Mr. Chapman in his 'Handbook of Birds of Eastern North America,' p. 220, in comparing herons and bitterns states, "Herons perch and usually nest in trees; Bitterns rarely or never do." It is presumable, therefore, that the occurrence of Bittern perching in a tree may have been previously noted by observers, but, perhaps, such an occurrence as this bird in the Public Garden perching throughout the day and remaining for hours undisturbed and unconcerned in its typical statuesque attitude is unprecedented.—HORACE W. WRIGHT, *Boston, Mass.*

Golden Eagle (*Aquila chrysaetos*) at Springfield, Mass.—On the twentieth of last February a female Golden Eagle was taken in Somers, Connecticut, about ten miles from here. This specimen is now in the Museum of Natural History, in Springfield.

During the last fifty years there is only one previous record of the occurrence of this species in this vicinity.—ROBERT O. MORRIS, *Springfield, Mass.*

Sparrow Hawks Nesting in a Bird House.—A pair of Sparrow Hawks have nested in a sort of a pigeon house that was built by a man on my place and fastened on top of a pole about 18 feet from the ground and placed in the middle of the chicken yard. It somewhat resembles a martin house, though the holes are larger. Of course, they have the house to themselves. It is located within 200 feet of a Martin house occupied by a large colony of these birds which are continually worrying the hawks when they return with food for the young. A week ago when I looked in the box there were three or four young ones covered with white down.—WM. H. BROWNING, *New York, N. Y.*

Black Vulture in Massachusetts.—A female Black Vulture (*Catharista urubu*) was shot by Archer L. Pierce, Aug. 20, 1917, on the Burnham estate at the west end of Wenham, Mass. The bird was eating from a garbage pail at the time. The specimen has been sent to the Boston Society of Natural History.—JOHN C. PHILLIPS, *Wenham, Mass.*

Crow Roost near Boston, Pennsylvania.—For more than fifteen years there has been a large crow roost in the hilltops adjoining the borough of Boston, Pa. Recently a few hunters with shot guns have compelled the Crows to change their roost a distance of one fourth of a mile north to the hilltops of "Deadman's Hollow" which brings it within about half a mile of the city limits of McKeesport.

The writer succeeded in making a fair estimate of the number of birds gathering at the roost. Acres of trees blackened by masses of noisy crows is the usual impression that one gets from a visit to the winter night rendezvous. On March 10, 1916, the crows were driven out of the woods as they were gathering to roost whereupon they settled down over about 100 acres of snow covered fields. There they were visible and estimating one crow to every 200 square feet, a very low safe estimate, an approximate number of 20,000 crows was the result.

The ground covered and other factors entering into the estimate depends upon the writer's judgment as a civil engineer and surveyor.

This year while taking our Christmas bird census for 'Bird-Lore' 1,500 crows were counted flying overhead down the Youghiogheny River to the roost. The vast bulk of the crows came from the other directions and the 1,500 counted represent but a small percentage of the total number of crows.—THOS. L. MCCONNELL, *McKeesport, Pa.*

Evening Grosbeak (*Hesperiphona vespertina vespertina*) at Springfield, Mass.—For the last few years the Evening Grosbeak appears to be a regular winter visitor to this region. If this bird is to continue to appear here during the colder months, it will be interesting to know when its coming and going may be expected. Last season in central Massachusetts

its presence was first noted early in October, and the last one reported as seen here was upon May 18.—ROBERT O. MORRIS, *Springfield, Mass.*

Evening Grosbeak at Lakewood, N. J.—I am able to add a small item to the record of the Evening Grosbeak in New Jersey.¹ At Lakewood, on the morning of March 21, 1917, near the corner of Forest Avenue and Second Street, I found a flock of about a dozen birds some of which were on the ground, feeding, others resting in bushes and small deciduous trees. They were gone before I could make sure whether any males were amongst them.

These are the only Evening Grosbeaks I have ever seen at Lakewood, where I have passed several weeks or several months during most of the winter seasons for twenty years.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

Evening Grosbeaks at Hatley, Stanstead County, Quebec.—Since my previous note on the winter birds (*Auk*, Vol. XXXIV, 1917, No. 2, p. 217) Evening Grosbeaks (*Hesperiphona vespertina vespertina*) I am pleased to say have paid us a visit on their way home to the far northwest, being first noticed on March 10, when a pair were seen feeding on the seeds of the locust or false acacia tree. Five days later a flock of seven (out of which I obtained a fine male) visited my garden, feeding on the seeds of some crab apples still remaining on one of the trees, and on the twenty-first five more were observed in the same tree, of which no less than four were males in fine plumage. In addition to these fourteen examples Mr. W. E. Greer of Hatley Centre, informs me that he has seen a similar number, five on March 11, feeding on the seeds of some crab apples in his orchard, and nine on the seventeenth in a neighbor's orchard, which only alighted however for a minute (as there were no apples on the trees) and then continued their journey in a northerly direction. A noticeable feature this year both with regard to this species and the Pine Grosbeak (*Pinicola enucleator leucura*) the last of which were seen on April 14, has been the large number of full plumaged males, so different from previous years, when nearly all the flocks were composed of either females or immature males. My example of *H. vespertina vespertina* was given to the Victoria Memorial Museum at Ottawa, and I believe I am correct in stating that so far as the present material (which is somewhat scanty) there goes, it seems to indicate that there is no such thing in Canada as the Western race.—H. MOUSLEY, *Halley, Que.*

English Sparrow (*Passer domesticus*) Feeding on the Larva of the Elm Tree Beetle.—Here in West Haven we have a great many elm trees, which, if not sprayed, are badly infested with the elm tree beetle, the larvæ of which eat holes in the leaves causing them to turn yellow and

¹ See *Auk*, XXXIV, pp. 210-212, and p. 218.

fall to the ground. In July and August the larvæ having matured descend to the trunk of the tree where they crawl under the loose bark and form pupæ. For the last three years I have noticed English Sparrows working on the trunks of badly infested trees, but this year they were especially active, I having observed from one to four working on the trunk of a tree at a time. They would creep around the tree in Nuthatch fashion up as high as the first limbs for the descending larvæ. I stopped to watch a pair of sparrows working on a tree to be sure that they were feeding on the larvæ, I was only five feet away so I could positively see that they were taking the larvæ and as they flew away with their beaks full they evidently were feeding young. As I have never observed them taking the pupæ or imagoes so I could not say whether or not they take them, although I have seen them working on the ground at the bottom of the tree amongst the pupæ which became dislodged and fell to the ground. I believe the English Sparrow is becoming more insectivorous each year, as I have on several occasions observed them catching small moths on the wing, also breaking May beetles by pounding them on the sidewalk. Still, I believe the English Sparrow is decreasing in West Haven owing to the fact that the Starling, which is abundant at all times and occupies all available cavities, has forced the Sparrow to resort to the backs of blinds, where the nests are thrown out as soon as discovered. So, under the prevailing conditions I do not think that two pairs out of ten successfully rear a brood in a season. But nevertheless, let us hope that the English Sparrow will continue to be insectivorous, especially in July and August when the larvæ of the Elm tree beetle are at their height.—NELSON E. WILMOT, 24 New Street, West Haven, Conn.

The Slate-colored Junco in Colorado.—Dr. A. K. Fisher collected a specimen of the Slate-colored Junco (*Junco hyemalis hyemalis*) from a mixed flock in the suburbs of Denver, January 21, 1917. As this form is comparatively rare in Colorado, it seems desirable to record its occurrence in Denver, where hitherto I am inclined to believe it has not been detected. The specimen is in the collection of the Biological Survey at Washington.—W. H. BERGTOLD, Denver, Colo.

Nesting of the Chiapas Blue Grosbeak (*Guiraca cærulea chiapensis*).—Ridgway in his 'Birds of North and Middle America' gives this species as occurring on the "Plateau of western Chiapas." His data being derived from two specimens, one of which, from the State of Oaxaca, not being typical. Both of these specimens are females, the male being, to date, not described.

On May 26th, of the present year while on a collecting trip near the city of Tehuantepec with two youthful companions, I chanced upon the nest of this subspecies. Until this time I was not aware that it occurred in this locality and its discovery was therefore a surprise. Both during the fall and spring migrations the western form of the Blue Grosbeak is very

abundant and it is quite possible that this rarer subspecies may have been overlooked and confused with the migratory bird.

The nest was situated on the horizontal branch of a small mesquite bush in an abandoned cornfield. Being only about three feet from the ground it was well concealed by the rather tall grass and some vines of a little blossoming passion flower. The situation of the old cornfield was near the river bank which accounts, in this dry section of the State, for the grass and other green growth.

Upon discovery the parent bird was not present and a long watch was necessary before she made her appearance. Upon arrival she went at once to her nest, from which she was driven and shot.

Three fresh eggs were found in the nest, and dissection of the parent proved that the set was complete. The eggs appear to be pure white in color when unblown and exposed to the direct rays of the sun, but upon being emptied show a very delicate blue, lighter than that of our Eastern Bluebird. Through an accident two of these eggs were badly broken before our arrival home. The specimen not broken measures 23×17 mm.

The nest was well constructed and, roughly speaking, about 100 to 110 mm. in height and about the same in width. The coarser part, or foundation, is constructed of dried leaves, some finer portions of corn husks and, worked in through from one side to the other, the shed skin of a rather large snake. Forming the outer layer of this foundation are some dried weed stalks which are apparently held in position by coarse spider webs wound about the exterior after they have been placed in position. The nest proper is very neatly constructed of fine grass stems and lined with fine rootlets, yellow in color. The bowl of the nest is about 51 mm. deep and 60 mm. wide.

The parent is in full breeding plumage, and, unlike Ridgway's description, is lighter in color than specimens of *G. c. lazula*, especially below. It also shows washings of blue on the ear coverts and wings.—P. W. SHUFELDT, *Tehuantepec, Oaxaca, Mexico.*

Brewster's Warbler (*Vermivora leucobronchialis*) in Lexington, Mass.—In 'The Auk' for October, 1907, I recorded a Brewster's Warbler found during the summer of that year in a swamp in Lexington, Mass. In the decade that has since elapsed, this bird has been found established in the same swamp every summer except that of 1909, when no search was made for it. In 1910 and 1913, Dr. W. M. Tyler and I made a careful study of this hybrid and its relations with the Golden-winged Warbler (*V. chrysoptera*) and the Blue-winged Warbler (*V. pinus*). The results of our observations were published by me in the Memoirs of the Museum of Comparative Zoölogy, Vol. XL, Nos. 2 and 6, January 1911 and August, 1913. The persistence of this hybrid form in the same locality through so many consecutive years is in itself well worthy of record; I wish, too, to summarize the knowledge acquired relative to the matings of these birds and the duration of the nestling period.

In the season of 1910 there were two pairs of which the males were Golden-wings, the females Brewster's; one pair of Golden-wings; and one unmated male Brewster's. The issue of one of the heterogeneous pairs, Golden-wing and Brewster's, were all Brewster's Warblers, of the other, a mixed brood of Golden-wing and Brewster's. The pair of Golden-wings produced Golden-wings only.

In 1912 a male Golden-wing mated with a female Brewster's.

In 1913 a male Golden-wing mated with a female Blue-wing, a male Brewster's with a female Golden-wing. The progeny of the first pair were all Brewster's, of the second pair one Golden-wing plus several Brewster's.

In 1914 a male Brewster's mated with a female Golden-wing; their nest was not discovered till June 16, the day the young left it.

In 1917 a male Brewster's mated with a female Golden-wing. Here are six cases of the mating of Brewster's Warbler, each time with a Golden-wing, and one case of a Blue-wing mated with a Golden-wing. Observe that all previously published accounts of the pairing of Brewster's Warbler have been records of the union of this form with either a Golden-wing or a Blue-wing (see my paper in Mem. Mus. Comp. Zool., Vol. XL, No. 2, p. 71).

It is worthy of note that the numerous Golden-winged and Brewster's Warblers seen in this locality during these years have without exception exhibited an absolute purity of plumage in spite of the constant crossing of the two forms. In other words, no plumage intermediate between the Golden-wing and Brewster's has cropped out.

Duration of the nestling period: in 1897 the five eggs in a nest belonging to a pair of Golden-winged Warblers (Arlington, Mass.) hatched June 8, the young left the nest June 15. In 1910 the five eggs of a Brewster's Warbler mated with a male Golden-wing hatched June 8, the young left the nest June 17. In 1917, the five eggs of a Golden-wing mated with a male Brewster's Warbler hatched June 21, the young left the nest June 29-30. The life of the young birds in the nest therefore covers from seven to ten days.

The spring of 1917 was without precedent in its backwardness. *V. chrysoptera* did not arrive until May 19. This is latest date for the arrival of this bird in my records of twenty-eight years, the average time of arrival being May 11-12, the earliest, May 3 (1905). This will account for the phenomenally late breeding of the 1917 birds given above.

Several other localities in the town of Lexington are the home of Golden-winged Warblers, but none of them have ever yielded a Brewster's Warbler. In the adjacent towns I have twice seen a Brewster's Warbler: in Concord, May 19, 1912 (Faxon, Mem. Comp. Zool., Vol. XL, No. 6, p. 312, footnote 1), five miles from the Lexington swamp, and in Waltham, May 31, 1915, two miles from the Lexington locality.—WALTER FAXON, *Lexington, Mass.*

Late Southward Migration of the Cape May Warbler on Long Island.— Doctor Richmond's record of a Cape May Warbler (*Dendroica tigrina*) at Washington, D. C., December 16, 1916 (Auk, XXXIV: 343) seems to make appropriate some account of this bird's southward migration the same year on Long Island where, also, the last one was seen in December. My latest previous record is October 12 (1912).

On my grounds at Hewlett, on the south side of the island, is an open grove of red cedars which evidently offer some particular attraction to these warblers on their southward journey, and where, of late years, they have usually been more or less common at the end of August and in September, not infrequently remaining continuously present day after day. In the spring they are less often seen in these trees, showing then a preference for oak woodland. Some of these cedars are close to the house and it has occurred in several years that the "first arrival," to use a conventional term, has been seen from the windows in the early morning. In 1916 the first one was thus seen on August 26 (earliest record August 20, 1914). No other was observed until September 3, and during that month they were noted only a few times, making it appear that it was an "off year" for them in this region. But in October, from the 2d to the 8th, there was an unusual late flight, as many as six and seven being present on my grounds on several days. After this a single one was seen on the 13th and 15th. It may be of interest in passing to report of this particular bird that it was to be found the greater part of each day feeding in a willow where the sap was running from a row of holes made by a sapsucker. Often it was seen clinging to the trunk of this willow and pecking at the sap holes, but whether taking the sap or feeding on entrapped insects I could not determine.

My young daughters, who had come to know this warbler as a familiar bird, reported one on October 27, and again one November 15, on each occasion describing their bird so unmistakably that there was no possibility of error. On December 4, they observed another one, evidently a male in rather high plumage for the season. It was not at all shy, allowing them to follow it about and watch it feeding in the garden border on the berries of a tree of *Eleagnus umbellata* whose abundant fruit remained in an unripened condition. The next morning I myself saw the bird, obtaining several perfect views at a distance of not more than a few yards, my daughters, who were with me, could detect no differences in its plumage from the one they had watched the previous day, and there was no reason to suppose it was not the same bird. Both days had been fair and unusually mild for the season, the temperature standing at 53° in the early evenings.

Many birds on their southward journey lingered unduly that mild season, and at Hewlett a considerable number of species remained later, some of them much later, than I had ever recorded them before. Most noteworthy of all, perhaps, was the Cape May Warbler. For this reason its occurrence on Long Island and at Washington in December would seem to be less in

the nature of accidental happening than in conformity with a remarkably retarded migration, not necessarily of the species as a whole, but quite possibly of a regional group acted upon, perhaps as long before as their breeding season, perhaps later, by some unusual inhibiting influence. The late occurrence of this species the same year in Massachusetts, at Belmont, November 15, 19 and 25, has been reported by Dr. Walter Faxon (Auk, XXXIV: 217).

It may here be noted that the northward migration of this warbler the following spring was also unusually late, this, however, being true of most of the warblers, the result of a phenomenally cold and backward May. It was not observed until May 17, and the later dates of its occurrence were the 27th, a bright male and a dingy female, and June 3, a female; my latest previous record having been May 18, 1916.—EUGENE P. BICKNELL, *New York, N. Y.*

Rare Warblers at Hatley, Stanstead County, Quebec.—Notwithstanding the very cold and backward spring I have added two new warblers to my list (which now numbers 22 species), the Tennessee (*Vermivora peregrina*) and Blackpoll (*Dendroica striata*). Four examples of the former were seen between May 26–27, out of which two were obtained, and a male of the latter was seen at Ayers Cliff (about six miles from Hatley) on May 28 at close quarters, making identification absolutely sure. In addition to these between May 19 and June 2 may be mentioned twelve examples of the Cape May (out of which I secured three), Nashville, nineteen; Bay-breasted, twelve; Blackburnian, three; Northern Parula, one; and Water-Thrush, eight; besides numbers of all the commoner species with the exception of the Yellow which was again scarce as usual, only three examples being seen.—H. MOUSLEY, *Hatley, Que.*

Sap Drinking Habits of Warblers.¹—So far as I can gather very little is known concerning the above matter, for in the nine or ten pages devoted to the food of these interesting little birds in the standard work on their life history, not a word is mentioned about it, and the only reference I know of will be found in the Biological Survey, Bulletin No. 39 'Woodpeckers in Relation to Trees and Wood Products' 1911, p. 98, wherein the author, Mr. W. L. McAtee, speaking of some defensive measures against sapsuckers recommends poisoning the sap, but adds the following warning note, viz.: "It should be noted here that hummingbirds and some other small birds, particularly warblers, will be killed by poison intended for sapsuckers." From this we may gather that the habit is not altogether unknown, but the majority of people, I think, are unaware of it, certainly I have been paying special attention to this family for the past few years, but have never noted it until the fall of last year (1916) and therefore think my experience may be worth recording. It was on Sep-

¹ Read before the Nuttall Ornithological Club, May 21, 1917.

tember 19, that whilst passing close to an old silver birch tree on the borders of a large wood, a Myrtle Warbler (*Dendroica coronata*) flew off one of the overhanging branches, which at the time naturally caused me no surprise, nor was I particularly interested, when returning some two hours later the same thing occurred again. However in the afternoon when covering the same ground the warbler again left the branch, as well as a Yellow-breasted Sapsucker (*Sphyrapicus varius varius*) the trunk, I must admit my curiosity was aroused, and I decided to secrete myself and await results. It was not long before both birds returned to the tree, the sapsucker to some holes in the trunk, and the warbler to some on the upper side of the branch which I had not noticed. Here he regaled himself on the sap after the manner of his companion, and continued doing so for some considerable time, until I came out of hiding when both birds flew away. For the next two days I visited the spot on several occasions and every time the warbler was there, and usually the sapsucker as well but I never saw the former attempt to take the sap from the holes in the trunk, but only from those on the branch, where it was able to perch readily and drink at leisure, and no doubt eat any small flies or insects that may have got caught in the sap as well. The next case to come under my notice was that of an adult female Black-throated Blue Warbler (*Dendroica caerulescens caerulescens*) which on October 1 (the latest date as it so happens on which I have noticed it here) flew into the branches of a beach tree and commenced imbibing the sap from some old sapsucker holes. Whilst watching it I noticed another cluster of holes in the trunk, and it was not long before the bird on hovering wings after the manner of a hummingbird was abstracting the sap, and no doubt any insects from these also, thus differing in this respect from the Myrtle, which as already stated never once attempted the feat, although no doubt it was quite as competent to perform it as the other. It looks as though this habit may only be resorted to in the fall, when insects are scarce and late departing birds have some difficulty in making all ends meet.—H. MOUSLEY, *Halley, Que.*

A Roosting Place of Fledgling House Wrens.—A pair of House Wrens which had bred in a box in Mr. George Nelson's garden in Lexington, Mass., brought out their second brood of young in the morning of Aug. 19. 1917. The family remained in the vicinity of the box during the day. At twilight Mr. Nelson watched one of the parents assemble the young birds in a pitch pine tree near the box, and escort them to a little nest or platform well concealed among the pine needles where they settled for the night, huddled together in a compact mass. The Wrens' roosting place is five feet from the ground and twelve feet from the box they were reared in. It is a frail, circular, shallow cup, made of fine roots and was originally no doubt, the foundation of a Chipping Sparrow's nest. On the following night the young birds, after making a tour over the space of half an acre, during which they visited another nest twenty yards away, returned to the same place to roost. On the next evening (Aug. 21) I joined Mr.

Nelson and we watched the fledglings for half an hour at the close of their third day. They were in a pitch pine tree across the driveway from the roost. One or both parents brought food to them every five or ten minutes. These visits occasioned a lively chattering which resembled the clucking of Red-winged Blackbirds on a small scale. After the parent's departure the young birds quieted, although they often continued to give single, double, or triple clucks for a minute or two. Finally, as it was growing dark, about 6.45, all the young birds (five of them) fluttered across the drive and joined their parent. As the little, tailless birds flew overhead in quick succession, they appeared against the sky like tiny Woodcocks rising for a song flight. Nothing could be plainer than that the flight was in obedience to a command from the old bird,— the fledglings started at almost the same instant and hurried off all together. Tonight, under the guidance of the parent, they took a direction away from their former roost. We followed and found three of them in the abandoned nest which they visited last evening. On our arrival they came out and with much chattering withdrew. Twice a bird returned, hopped about the nest for a moment and then flew away. The family settled near, just where we could not see. On the following evening we saw or heard nothing of the brood at twilight.

It would be of interest to learn whether this use of abandoned nests of other birds is a common practice with the House Wren, especially when we recall that the male of some species of wrens builds seemingly useless nests while the female is sitting.— WINSOR M. TYLER, M. D., *Lexington, Mass.*

The Labrador Chickadee (*Penthestes hudsonicus nigricans*) at Cohasset, Mass., late in May.— From May 19 to 23, 1917, inclusive, a Brown-headed Chickadee, probably the Labrador form, was seen several times each day in the garden. The bird was very tame and easily recognized. The peculiar note first attracted my attention, and after once seeing the bird it was easy to find it at any time during its stay with us. Usually it was with a small flock of the Black-capped Chickadee (*Penthestes a. atricapillus*) and was as easily approached and as tame as is its more southern relative. A thick row of spruces bordering the garden seemed to be its favorite haunt. Neither species remained on the place during the summer.— ARTHUR P. CHABOURNE, M. D., *Jerusalem Road, Cohasset, Mass.*

Labrador Chickadees at Hatley, Stanstead County, Quebec.— It is with pleasure that I record a visit of Dr. Townsend's new subspecies the Labrador Chickadee (*Penthestes hudsonicus nigricans*) to Hatley, on its return journey to its breeding grounds. The birds were first observed on May 14 and between that date and the thirtieth on which the last was seen, seven examples were secured, three being sent to Dr. Townsend, and the other four to the Victoria Memorial Museum at Ottawa. The former

consisted of two adult males and one female, the latter of two males and two females. They were generally alone or in the company of Golden- or Ruby-crowned Kinglets, and were somewhat shy and difficult to approach, which made their exact number not easy to estimate. Besides the seven obtained I can only positively assert to having seen four other examples, although I know there were several more that I was unable to follow up.—H. MOUSLEY, *Halley, Que.*

Rare Winter Visitants in Northern Indiana.—1. ***Astur atricapillus atricapillus***. GOSHAWK.—One seen carrying a rabbit in its talons at Mineral Springs, Porter County, Ind., Feb. 17, 1917.

2. ***Picoides arcticus***. BLACK-BACKED THREE-TOED WOODPECKER.—A fine male of this species was taken near Millers, Lake County, Ind., on March 11, 1917. When first seen the bird was busily engaged in digging larvæ from under the bark of a dead northern scrub pine, in a small grove of these trees a short distance from the shore of Lake Michigan. It was very tame and appeared rather sluggish and clumsy in movement.

The stomach contained nearly complete skins with heads of eleven wood boring larvæ, and heads only of twelve more. These larvæ were identified for me by Mr. A. B. Walcott of the Field Museum as *Monohammus titillator* var. *carolinensis*, Oliv. This is the first Indiana record for this woodpecker.

3. ***Hesperiphona vespertina vespertina***. EVENING GROSBEEK.—Present in small numbers in the dune region, although not nearly so numerous as during the previous winter. A flock of fourteen were seen feeding on poison sumac berries at Mineral Springs, Porter County, on Nov. 25, 1916. A single bird was noticed at the same place, also feeding on these berries on Dec. 23, 1916. My last record was March 24, when five or six were seen.

4. ***Acanthis linaria linaria***. REDPOLL.—Unusually abundant throughout the winter, appearing in large flocks about the middle of November and remaining until late in March, a small flock being seen on March 24. Many hundreds of these birds were seen migrating north-westward along the lake shore on the evening of March 11, 1917.

5. ***Acanthis hornemanni exilipes***. HOARY REDPOLL. Four or five very light colored redpolls were seen feeding by the roadside with a large flock of *linaria* at Mineral Springs, Porter County, Ind., on Dec. 23, 1916. One of these which was collected and compared with specimens in the Field Museum proved to be the Hoary Redpoll, *Acanthis hornemanni exilipes*, a new record for the State. The specimen is perfectly typical in every respect, with the exception of the rump which is not as white as is usual in this variety. The skin is in the Harris Extension collection.—H. L. STODDARD, *The N. W. Harris Public School Extension of Field Museum, Chicago, Illinois.*

RECENT LITERATURE.

Bergtold on the Incubation Periods of Birds.¹—It is refreshing to find an ornithological writer who strikes boldly out upon an essentially new line of research as Dr. Bergtold has done in the volume before us. The problem to the solution of which he has applied himself is by no means an easy one. The personal collection of the necessary data being out of the question, the author has had to depend upon such as could be compiled from widely scattered literature, the inaccuracies of which as the author explains have often proved confusing. When we realize that Dr. Bergtold was removed from any of the large scientific libraries and that his investigations were "carried on in the spare moments of a fairly busy professional life," we are astonished at the completeness of his treatment of the subject.

To use his own words: "The problem in hand is to answer the question, Why does a house finch's egg take fourteen days to hatch, an ostrich's forty-two days, an emu's fifty-six days, or a hummingbird's fourteen days? . . . to analyze the published data, . . . to examine the explanations heretofore given . . . and to determine if there be a law which controls the length of incubation." The author considers in order the various possible factors which might affect the time of incubation, quoting previous writers and weighing the evidence for and against each theory, referring constantly to accompanying tables of length of incubation for various species, weight of birds, weights of eggs, and bird temperatures — all of them compiled from a wide range of publications and from some original data secured by the author and his friends.

Dr. Bergtold tentatively concludes on the one hand that the length of incubation is only loosely related to the size of the bird or the egg and not at all to the longevity of the species, the body-weight egg-weight index, age of the female or size of the egg yolk. On the other hand he considers that there is a true length of incubation which is a deep seated, persistent, specific character, that bird temperatures are closely related to taxonomic lowness or highness of the species and finally that "a bird's temperature determines or fixes the time of its incubation period," — the higher the temperature the shorter the period.

Dr. Bergtold further considers it likely that variation in the period of incubation and in temperature exists among the species of any family, from those taxonomically lowest to those taxonomically highest, so that a curve of variation from the lowest to the highest birds would show undulations within each family. In this connection he says: "The question of lowness or highness in birds, in the present discussion, is a question of

¹ A Study of the Incubation Periods of Birds. What Determines their Lengths? By W. H. Bergtold, M. D., M. Sc., Member of the American Ornithologists' Union. The Kendrick-Bellamy Co., Denver, Colorado. 1917. 8vo, pp. 1-109. \$1.50 postpaid.

how far a given species has journeyed away from its proto-avian stem, since it seems probable that the farther a bird is from its primitive ancestry, provided it does not later degenerate, the higher will be its temperature. I doubt very much that the present mainstays of taxonomy can alone measure this space between pro-bird and super-bird. I believe that future students of avian taxonomy will have to give more consideration, not only to embryology, but also to bird physiology, in order to correctly locate and plot the mileposts in a bird's journey."

In considering his data Dr. Bergtold calls attention to the real and apparent time of incubation, the latter being the actual time plus that due to errors of observation or to the fact that in some species early laid eggs are incubated to some extent during the laying of the subsequent ones — facts that should be considered in making use of published data. The lamentable scarcity of information on the weights and temperatures of birds is emphasized as well as the numerous opportunities for experimental investigation which the problems here discussed offer.

Dr. Bergtold's book is a valuable contribution to a neglected line of research and can be read with profit by all ornithologists. That it does not represent the last word on the subject the author is the first to admit but it is so suggestive throughout that it cannot help but attract others to this interesting field, and we trust that ere long the accurate detailed data necessary for the final consideration may be forthcoming. And in this work our Australian friends can give valuable assistance by supplying the data on the temperature of the Megapodes which Dr. Bergtold has been unable to obtain.

Pending the accumulation of further data we may accept his conclusions as the most plausible solution of the problem yet presented, and even if, as the author suggests, they be not entirely original they are certainly more concisely and convincingly set forth than has been done by anyone else.

We regret that the book shows numerous evidences of hasty proof-reading resulting in some misleading errors, as "egg-white" for egg-weight, on page 44. We also notice on page 16 a reference to the relationship of "the finches of Australia . . . to their cousins of the North" but the so called "finches" of Australia are really Weavers and belong to a different family.— W. S.

Howell on the Birds of the California Coast Islands.¹— This admirable paper forms No. 12 of the 'Pacific Coast Avifauna' published by the Cooper Ornithological Club and maintains the same excellence in style and typography presented by recent numbers of the same series. Mr. Howell having formed a personal acquaintance with the birds of some of the islands, was impressed with the need of a comprehensive treatise on the avifauna

¹ Birds of the Islands off the Coast of Southern California. By Alfred Brazier Howell. Pacific Coast Avifauna No. 12. Cooper Ornithological Club. June 30, 1917. pp. 1-127. Price \$1.50.

of the group as a whole and began a compilation of data from published papers and manuscript notes of others who had visited the islands, which has resulted in the brochure before us. The author covers the whole series of islands generally known as the Santa Barbaras, from San Miguel on the north to San Clemente on the south as well as Los Coronados lying off the northern part of Lower California, which so far as their fauna is concerned belong to the same group.

Altogether 195 species are considered, with 13 others in a hypothetical list. A full synonymy under each species gives all references to papers dealing with its occurrence on the islands. The text consists of a summary of these and other original data as well as a consideration of the relation of the island birds to those of the mainland in the case of resident species where there is any reason to suspect subspecific differences. Nineteen island forms have been named, some of which have not been considered by the A. O. U. Committee as sufficiently differentiated to warrant recognition. Mr. Howell follows the views of the Committee in such cases so far as nomenclature is concerned though the differences are fully discussed in his text. In one or two cases he points out slight differences between island and mainland representatives of other species but wisely refrains from burdening them with names. In a table appended to the list proper, the occurrence of each species on the various islands is graphically shown, and they are further listed according to time and character of occurrence. We find here that no less than 56 species are resident, while eight others occur at any time of year but do not breed on the islands and six additional species are summer visitants.

In the introductory pages Mr. Howell gives an interesting account of the physical features of the several islands and discusses the problems which their fauna presents. He considers the recognition of a Santa Barbara Island Faunal Area more a matter of geographical convenience than an indication of any peculiarity in the fauna. In the main he considers the island fauna San Diegan, though it contains Sierran elements and a suggestion of the San Francisco Bay Region. Changes in the habit of the resident birds and the earlier nesting dates and period of molt as compared with birds of the mainland are described and an excellent bibliography and index close the publication.

The plan of Mr. Howell's fauna is excellent and it has been admirably carried out. Both he and the Cooper Club are to be congratulated upon this addition to their series.—W. S.

Shufeldt on a Fossil Bird from the Florissant Shales.¹—This brief paper describes impressions of the foot and pelvis of a bird which Dr. Shufeldt regards as most closely resembling the Purple Grackle so far as measurements go and he is inclined to think that they represent a passerine

¹ Fossil Remains of What Appears to be a Passerine Bird from the Florissant Shales of Colorado. *Proc. U. S. Nat. Mus.*, Vol. 53, pp. 453-455, pls. 60-61. August 15, 1917.

bird of about the Grackle's size but adds "there is no certainty about it whatever" and so wisely refrains from naming it.— W. S.

Richmond's Third Supplement to Waterhouse's "Index Genera Avium."— This welcome publication follows the plan of its predecessors except that the types of the genera have been determined according to the rules of the International Code of Nomenclature and derivations of names have been omitted except when furnished by the original authors. Some 600 names are listed of which more than half have been published since 1905 and of these about 175 are credited to Mr. Gregory M. Mathews. Perhaps the most important feature of this supplement is the list of errors in Waterhouse's 'Index.' This consists of vernacular and other names which have no generic status at the citations given, errors in spelling and in statement, all of which are corrected by Dr. Richmond, and nomina nuda, for which the proper citations are given. Lists of Linnæan genera which are citable at earlier date than those given by Waterhouse (mainly due to his adoption of the 12th in place of the 10th edition of the *Systema*) are given, as well as original references to Bonaparte's genera which appeared originally in the 'Ateneo Italiano' and corrections to the two previous "Supplements."

With this pamphlet before them systematic ornithologists are for the first time in possession of accurate references to all the genera of birds so far as known. That a few still remain to be unearthed from obscure publications goes without saying, but they will not begin to approach the number included in the present list which latter represents the results of the painstaking researches of both Dr. Richmond and Mr. G. M. Mathews during the past ten years.

When one considers that much of Dr. Richmond's time has necessarily been taken up in searching out the true date of issue of many wrongly dated publications it seems like the irony of fate that his own paper should be antedated. It seems high time that someone in charge of the scientific publications at Washington takes steps to check this unfortunate practice.— W. S.

Aves in the Zoological Record for 1915.²— Mr. W. L. Slater is again the author of that section of the *Zoological Record* devoted to birds, and has compiled a list of 934 titles for the year 1915, with the usual rearrangement of references under various subjects — geographic, economic, plumage,

¹ Generic Names Applied to Birds During the Years 1906 to 1915, inclusive, with additions and corrections to Waterhouse's "Index Genera Avium." By Charles W. Richmond, Assistant Curator of Birds, United States National Museum. *Proc. U. S. Nat. Mus.*, Vol. 53, pp. 565-636. August 16 (= 25), 1917.

² *Zoological Record*. Vol. LII, 1915.— Aves. By W. L. Slater, M. A. May, 1916. Printed for the Zoological Society of London, sold at their House in Regents Park, London, N. W. Price six shillings. pp. 1-74.

migration, etc., and a list of all new species and genera arranged systematically. This publication is invaluable to the working ornithologist and deserves a much larger sale than it has had in the past. Its continuation from year to year is essential to the advance of ornithology and the Zoological Society should be given every support possible in the good work that it is doing.—W. S.

Kuser's 'The Way to Study Birds.'¹—This attractive little book is another of the numerous publications designed to aid the beginner in identifying the familiar birds of the eastern states. Mr. Kuser's plan is the reverse of that usually advocated in such books as he presents concise accounts of a number of the most abundant species to be found in the vicinity of New York City, and then instructs his readers to familiarize themselves with the appearance of the first one and go out into the field and find it before taking up the second, and so on through the series. That he does not discourage the usual plan of finding your bird first and identifying it from the books later is shown by the fact that he presents a field key to be taken into the field or to be used in identifying descriptions made there. While the two sets of instructions are somewhat contradictory good results may be gotten from each, while the additional information on bird protection, winter feeding, note-keeping, bird books and bird societies will answer many questions for the reader. The well printed color plates from paintings by Louis Agassiz Fuertes add much to the attractiveness of the book.—W. S.

The Birds of Australia.²—The fourth part of Volume VI of Mr. Mathews' work treats almost entirely of the genus *Platycercus* of which he recognizes seven species including some of the most brilliantly colored of the Australian parrots. Much interesting information concerning their habits and distribution is furnished by the author's Australian correspondents, while he has traced out the history of their discovery and as usual has considered the nomenclature and synonymy of the species at considerable length. We notice only two new names proposed in this number, i. e., *Platycercus caledonicus flindersi* (p. 328) from Flinders Island, and *P. eximius colei* (p. 360) from Ballarat, Victoria.—W. S.

Brooks on Some Falkland Island Birds.³—Mr. W. Sprague Brooks, who recently spent several months on the Falkland Islands in the interests of Dr. John C. Phillips, presents in the present paper his notes on the forty-three species of birds which came under his observation. Many

¹ The Way to Study Birds. By John Dryden Kuser. With 9 Illustrations in Color. G. P. Putnam's Sons. 1917. pp. 1-85. Price \$1.25 net.

² The Birds of Australia. By Gregory M. Mathews. Vol. VI, part IV. June 27, 1917.

³ Notes on Some Falkland Island Birds. By W. Sprague Brooks. Bull. Museum Comp. Zool., Vol. LXI, No. 7. June, 1917. pp. 135-160, pls. 1-3.

interesting accounts of the habits of the species are given, those dealing with the Gentoo Penguin, Upland Goose and Steamer Duck being the most extended. *Halobæna murphyi* (p. 146) is described as new from a skin received from South Georgia Island, while *Anthus phillipsi* and *Phrygilus malvinarum* have already been described by the author and *Clæphaga hybrida malvinarum* by Dr. Phillips from material collected on the Falklands. The plates are some excellent reproductions of photographs of Penguins, Geese and Steamer Ducks.

The introductory paragraph of this interesting paper is unfortunately brief. Neither the personnel of the expedition nor the dates which it covered are given nor is there any mention of the size of the collection nor its disposition, though we infer that it is in the Museum of Comparative Zoölogy.—W. S.

Richmond on New Birds from Haiti.¹—Dr. Abbott's recent exploration of the northwestern peninsula of Haiti and the adjacent island of Tortuga has yielded a collection of twenty-three species of birds of which two prove to be new. These Dr. Richmond describes as *Nyctibius griseus abbotti* (p. 1), Port de Piment, and *Vireo crassirostris tortugæ* (p. 2), Tortuga Island. The occurrence of *Nyctibius* is particularly interesting as the genus was hitherto unknown from the island.—W. S.

Brooks on 'The Food of West Virginia Birds.'²—The aim of this publication is to provide a simple, readable work of reference on the birds of West Virginia with especial reference to their food habits. The author's long acquaintance with birds of the state, and his attention to economic ornithology have enabled him to succeed in his purpose. A few points not given sufficient consideration may be mentioned. In the section on "Birds in Relation to Trees and Forests" (pp. 12-13) the injurious effects of sapsucker work are passed over lightly and the impression even given that the value of lumber is enhanced. This is theoretically possible but practically of no importance, while damage is abundant and severe.

The statement in another place (p. 41) that sapsucker work produces the birds-eye effect in maples is misleading, as the birds-eye resulting from this cause is distinct from that having commercial value, and is invariably accompanied by defects that render it useless. In his section on "Birds and Fruits" (pp. 14-16), Mr. Brooks cites an observation of his that birds did not seem fond of mulberries, and says it seems to disprove the theory that mulberries serve as a protection to cultivated cherries. The protective value of mulberries among small fruits is so well established as to be no longer a theory. In any case, a single observation to the contrary cannot

¹ Descriptions of Two New Birds from Haiti. By Charles W. Richmond. Smithsonian Misc. Collns. Vol. 68, No. 7. July 12, 1917. pp. 1-3.

² Brooks, E. A. Bull. 15, West Va. Dept. of Agriculture, March, 1916, 74 pp., 20 half-tones, 3 col. pl.

overbalance almost unanimous testimony, based on many years of experience on the other side of the proposition. Mr. Brooks gives considerable space to general discussion of Economic Ornithology and the Protection of Useful Birds. Treatment of birds by systematic groups however makes up the bulk of the report.—W. L. M.

Bird Pests in War Time.¹—Recent publications of the British Board of Agriculture and Fisheries show that war has brought home the necessity of controlling crop destroying pests, birds as well as mammals. Thus sparrows are coupled with rats and rooks with rabbits. The formation of rat and sparrow clubs is advised and the details of organization, and amounts of bounties they may pay are specified. For sparrows the rates, in each case for a dozen, are: one penny for eggs, two pence for young, and three pence for adults. Various methods of combating sparrows and rooks are advised, those involving the destruction of eggs and young being most favored. The sparrow is definitely classed as "small vermin" for which under certain restrictions poisons may be legally laid. To conserve lead the use of ammunition for destroying pests is permitted only under license.—W. L. M.

Field Study of the Food of Nestlings.—The 1915 volume of the Proceedings of the Indiana Academy of Science which has just come to hand (June 25, 1917) includes an article on 'The Food of Nestling Birds.'² This paper contains detailed records of the number of feedings of broods of the Brown Thrasher, Robin (10 nests), Wood Pewee (2 nests) and Kingbird. The general nature of the food also is shown.

So far as this data goes, it is good, but it does not have the value implied by the authors in their somewhat inaccurate remarks upon another method of studying the food of nestlings. "It is contended," say they, "that the stomach contents afford the only accurate and reliable method of study of the food of birds. We believe that this method is not applicable to the food of nestling birds for two reasons: first, the food is soft and not readily identifiable; and the second and more important reason is that the food is digested very rapidly. The stomach contents do not serve as a criterion of the *quantity* of food that is eaten in the course of a day" (p. 232).

The remark in the last sentence is true; we must depend upon field observations to a large extent for ideas upon the quantity of food consumed. It must not be inferred however, that stomach examination is useless in this respect; on the contrary, it has served as the basis for a number of valuable estimates.

The declarations of Messrs. Enders and Scott, relating to the identification of the food of nestlings by stomach examination are wide of the mark

¹ Leaflet No. 84, 1916, and Bulletins 2 and 4 of Series A, 1917.

² Enders, H. E., and Scott, Will, pp. 323-337.

and are the result of inexperience. The facts are: that nestlings do not thoroughly digest their food (apparently taking only the most available nourishment), so that identification is easier in corresponding cases than in adults; and that not only stomach analysis, but even examination of excrement, gives results that far surpass in definiteness and accuracy, anything that can usually be learned by field observation.

For instance contrast the following statements of the results (from the paper reviewed) of 16 hours watching the feeding of brown thrasher nestlings and the analysis of a few droppings of nestling cardinals.

<i>Brown Thrasher</i>	<i>Cardinal</i>
150 cutworms	17 rose-beetles (<i>Macrodactylus subspinosus</i>)
9 "worms"	2 other Scarabæidæ
5 earthworms	1 click beetle (<i>Limonius</i> sp.)
11 dragonflies	1 caterpillar hunter (<i>Calosoma scrutator</i>)
10 beetles	1 leaf-hopper (Jassidæ)
50 ants	3 grasshoppers
1 grasshopper	1 spider
72 or more other insects.	1 dragonfly
	many bits of snail
	17 blackberry seeds (<i>Rubus</i> sp.)
	221 mulberry seeds (<i>Morus rubra</i>)

Is it not obvious that the examination of excrement if carried on to an equal extent would surpass field observations in every way? Stomach examination would be still more definite as to composition of food; but would not yield so much information on quantity. The greatest defect of this method however, is that only one batch of data is obtained from a single individual.

The foregoing notes on the cardinal are quoted from the reviewers' paper on the grosbeaks,¹ where the method of studying the food of nestlings by analysis of the excrement was urged. The method used was to tie a bag with a distinctly colored tape, over the breastbone and under wings of each nestling. The excrement can be gathered from such bags at any intervals desired and preserved as separate castings or in mass for analysis. The observer need not remain at the nest but can carry on similar operations at several nests if desired. This work could be carried on by the same class of observers who now publish data on the frequency of feeding and the material if analyzed by competent scientists, would yield a vast amount of definite and therefore valuable information.—W. L. M.

Effect of Poisoning Operations on Birds; Value of Carrion Feeders.—These interesting topics are further illuminated by data presented by W. W. and J. L. Froggatt in their third report on sheep-

¹ Bull. 32, U. S. Biol. Survey, 1908, pp. 23-24.

maggot flies in Australia.¹ As one of the measures directed toward the control of flies, carcasses are sprayed with arsenic water. Large numbers of flies are thus killed but there is no evidence that birds are destroyed by feeding upon the poisoned flies. The authors cite corroborative experience in South Africa where storks fed freely upon poisoned locusts without ill effects.²

Messrs. Froggatt note that many people consider that rabbit poisoning operations are responsible for a decrease in the number of birds and therefore for the pest of blowflies. The principal bait used for rabbits appears to be poisoned bran and as the work is done upon a large scale the bait is hauled about in carts. The authors express the opinion however that "the use of the poison-cart has been a very minor factor in the decrease of insectivorous birds, for with the exception of one or two, these birds do not follow the poison-cart to pick up the bits of poisoned bran or devour the dead rabbits." (p. 22). Where birds have been reduced it has been due chiefly to clearing of the land, to lack of water and to depredations of feral cats.

The testimony of these Australian authors is interesting to us in the United States, as there are complaints that the use of poisoned bran as bait for cutworms has caused destruction of birds. The United States Bureau of Entomology which recommends this method has looked carefully into the question of possible effect upon birds and has decided that no harm is done. Nothing in the experience of the United States Biological Survey has inclined it to doubt this conclusion.

When poisoned grain is used the effect is sometimes disastrous however, as Mr. S. E. Piper stated in his report on the mouse plague in Nevada.³ He remarks: "Unfortunately a large number of magpies and blackbirds fell victims to the poisoned grain; while to a less extent meadowlarks, killdeers, and mourning doves were killed."

The other point brought up by Messrs. Froggatt, the possible poisoning of predatory and carrion feeding birds by their eating animals killed by poisons has been carefully investigated by field men of the Biological Survey and their unanimous conclusion is that such destruction is negligible.

Destruction of birds by direct feeding upon baits placed for predatory animals however, is another question and one that should be kept in mind at all times in the great campaign of this kind now being waged in our western states. In Australia "the destruction of the carrion-feeding birds

¹ Farmers' Bull. 113, Dept. of Agric., New South Wales, June, 1917, p. 9 and pp. 21-24. Bull. No. 95 on the same subject was noticed in 'The Auk,' 33, No. 2, April, 1916, p. 217.

² In this connection see Mr. E. H. Forbush's summary (Ninth Ann. Rep. State Ornithologist, 1916, p. 24) of the examination of birds thought to have been killed by spraying operations in Massachusetts, "Thus far the evidence is chiefly negative, as in nine years only three birds that possibly were poisoned by spraying have been found." Another valuable publication to consult is 'Arsenical Residues after Spraying,' by W. C. O'Kane, C. H. Hadley, Jr., and W. A. Osgood, Bull. 183, N. H. Agric. Exp. Sta., June, 1917.

³ Yearbook, U. S. Dept. of Agric., 1908 (1909), p. 308.

commenced and was nearly completed. . . by the use of strychnine baits laid for dingoes, wild dogs, wedge-tailed eagles, and crows, for it attracted and killed out most of our numerous useful small eagles and hawks" (p. 22).

The authors go on to say: "The carrion and carnivorous birds were so numerous less than forty years ago that very little carrion about the home station or sheep paddocks remained long enough to decay or to feed maggots. The inhabitants of the Southern United States and Mexico are wiser with their scavenger birds. They protect the turkey buzzard or vulture which is semi-domesticated in their towns, and so numerous that even a dead horse or bullock is stripped to the bone before it has been dead twenty-four hours" (p. 22). Whatever the merits of this encomium it now comes rather as coals of fire for the Southern States mostly have reversed their policy respecting the buzzard chiefly on account of a conjectural relation of the bird to the spread of stock diseases.¹

Messrs. Froggatt are of the opinion that "the carrion-destroying birds had a very great deal to do with the reduction of the numbers of insects like blow-flies. . . far more than the true insectivorous birds." However, some of the latter are commended for feeding upon the sheep-maggot flies, among them the Noisy Minah (*Myzantha garrula*), the White-eared Honey-eater (*Ptilotis penicillata*) and the Willy Wagtail (*Rhipidura tricolor*). Two of these are additional to the four groups mentioned in the previous report. A further warning is sounded regarding the starling.— W. L. M.

Economic Ornithology in recent Entomological Publications.—

In a report on white grubs which injure sugar cane in Porto Rico,² Mr. E. G. Smyth gives considerable credit to bird enemies of these pests. He refers to the results of stomach examination cited in Wetmore's 'Birds of Porto Rico'³ and gives an account of some of his own field observation.

"The blackbird or "mosambique," Mr. Smyth says, "is placed as the most important bird enemy of white-grubs because of its great abundance in those parts of the Island where the white-grubs are most injurious, namely, in the arid coast districts. It is a very common sight to observe considerable flocks of these birds following the plows and picking up grubs when fields cleared of cane are being broken up. . . . At Santa Rita, near Guanica Centrale, during the winter plowing season, actual observation and count, it was shown that over 90 per cent of the grubs exposed to light by the plows are picked up by these birds, so that the employment of peons to follow the plows and pick grubs is quite unnecessary in that district. When it is considered that a bird is able to consume more than the equivalent of its own weight of food in twenty-four hours, and that blackbirds during the plowing season of five to six months subsist almost wholly

¹ See 'The Auk', 30, No. 2, April, 1913, pp. 295-8.

² Journ. Dept. Agr. Porto Rico, 1, No. 2, April, 1917, pp. 53-54.

³ Bull. 326, U. S. Dept. Agr. 1916, reissued as Bull. 15, Insular Exp. Sta., P. R. 1916.

upon grubs, one may appreciate the vast numbers of grubs that they consume."

The authors of a bulletin on 'Grasshoppers and their Control,' in South Dakota recognize the importance of the bird enemies of these pests. They say:¹ "Practically all birds which feed in fields infested with grasshoppers, include these insects in their bill of fare, but the following are the most useful in this respect: prairie chickens, quails or bob whites, meadow larks, Franklin gulls, all species of plovers, sparrow hawks, marsh hawks, red-winged blackbirds, yellow-headed blackbirds, purple grackles, crows, screech owls, burrowing owls, robins and several kinds of sparrows. Chickens and turkeys when present in sufficient numbers, also aid in checking an outbreak of hoppers." — W. L. M.

Report of the Biological Division of the Canadian Geological Survey for 1916.²— Besides the report on museum accessions and activities there are to be found in this volume an account of a reconnaissance in Barkley Sound, on the West Coast of Vancouver Island, by Clyde L. Patch, with an annotated list of the birds obtained — 37 species — by P. A. Taverner. Mr. Taverner also has a list of 103 species obtained at Brackendale, Lillooet and McGillivray Creek, B. C., by C. H. Young and W. Spreadborough, and another account of a collection of 33 species made by C. H. Young, at Douglas, Manitoba. In the same report Dr. R. M. Anderson has an account of the work of the Canadian Arctic Expedition of 1914–1916, with an annotated list covering 61 species of birds. All these lists are termed "preliminary." — W. S.

The Ornithological Journals.

Bird-Lore. XIX, No. 4. July–August, 1917.

Children of the Midnight Sun. By Joseph Dixon.— An illustrated account of the breeding habits of the Semipalmated Sandpiper on the Arctic coast of Alaska.

The Giant Bird Diatryma. By Walter Granger.

The Schuylkill Heronries. By Frank L. Burns.— An historical account of the Night Heron rookeries north of Philadelphia and the constant persecution and wanton destruction which has almost exterminated them.

The Educational Leaflet treats of the Phoebe, with a colored plate by Sawyer.

The Condor. XIX, No. 3. May–June, 1917.

The Home Life of the Baird Sandpiper. By Joseph Dixon.— Another study on the Arctic coast of Alaska, with illustrations.

¹ Bull. 172, S. D. Agr. Exp. Sta., February, 1917, p. 565.

² Summary Report of the Geological Survey, Department of Mines for the Calendar Year 1916, Ottawa, 1917. pp. 337–386.

Wild Ducks in City Parks. By W. W. Richards.—Four remarkable photographs taken on Lake Merritt, Oakland, California.

Some Factors Involved in the Nesting Habit of Birds. By Clarence H. Kennedy.—A popular account of modifications in bird structure connected with the development of the nest-building habit.

The Status of *Aphelocoma cyanotis* and its Allies. By Harry C. Oberholser.—After studying a large series of these Jays Dr. Oberholser finds that *A. cyanotis* does not occur within the boundaries of Texas, specimens so identified proving to be *texana*, and it must therefore be eliminated from the A. O. U. Check-List. Furthermore he finds that with the exception of the Florida Jay (*A. cyanea*), and *A. insularis* from Santa Cruz Island, all the forms intergrade and must therefore be rated as subspecies of *A. californica*. *A. c. immanis* Grinnell he regards as a recognizable race.

Birds of the Humid Coast. By Florence M. Bailey (concluded).—A delightful account of the birds of the California coast region.

The Condor. XIX, No. 4. July–August, 1917.

The Ospreys of the Yellowstone. By M. P. Skinner.

Habits of the Magpie in Southeastern Washington. By Lee R. Dice.

The winter Migration of 1916–17 in the Northwest. By J. Hooper Bowles.—Photograph of Bohemian Waxwings.

Observations on Some Fresno Birds. By H. S. Swarth.

Some Birds of Central Oregon. By Alex Walker.—An annotated list of 139 species.

The Wilson Bulletin. XXIX, No. 2. June, 1917.

Some Notes of the Birds of Rock Canyon, Arizona. By F. C. Lincoln.—An annotated list of 66 species.

Some Local Names of Birds. By W. L. McAtee.—Local names for 156 species supplementary to a previous list published in 'Forest and Stream,' Vol. 77, pp. 172–174 and 196–197.

More Records from the "Shores" Collection. W. F. Henninger.—Mainly from Connecticut.

A Criticism of two Recent Lists of Iowa Birds. By Ira N. Gabrielson.—Errors in a paper by C. L. Fenton corrected and other probable errors in this paper and one by F. M. Tuttle are pointed out.

The Oölogist. XXXIV, No. 6. June 15, 1917.

Bird Collecting in Eastern Colombia. By Paul G. Howes.—The author's diary on the American Museum Expedition of 1913, under Dr. F. M. Chapman (continued in the July and August numbers).

Oölogist. XXXIV, No. 7. July, 1917.

Nesting of the Mallard Duck at Branchport, N. Y. By Verdi Burtch.

The Ibis. X Series. V, No. 3. July, 1917.

Notes on the Ornithology of Malta. By G. Despott.—The first installment consists of a bibliography and an annotated list of 146 species.

Notes on the Nidification of some Indian Falconidae. II. The Genus *Accipiter*. By E. C. Stuart Baker.

A Collection of Birds from two Districts of British East Africa. By

C. W. Mackworth-Praed.— Collections were made on the Tsavo River and about Thika. 188 species are listed, and several groups are considered at some length — notably the species of *Podica*.

What is *Turdus minutus* Forster, from Cook's Botany Island? By L. Brasil.— Identifies it with *Acanthiza flavolateralis* of G. R. Gray.

Notes on Birds recently observed in Macedonia. By Capt. A. G. K. Sladen.

Bulletin of the British Ornithologists' Club. CCXXV, May 25, 1917.

Lord Rothschild discussed the species of *Lophophorus* and came to the conclusion, with the aid of a large amount of new material, that *L. refulgens* and *L. impejanus* are one and the same species.

Dr. Hartert called attention to the peculiar protuberance on the belly of *Textor*.

Bulletin of the British Ornithologists' Club. CCXXVI, June 26, 1917.

Dr. Hartert described *Alaemon alaudipes boavistae* (p. 56) from Boavista Cape Verde Islands.

British Birds. XI, No. 1. June, 1917.

Additions and Corrections to the Hand-List of British Birds. (Second List.)

Notes on the Breeding Habits of the Dotterel on the Yenesei. By Maud D. Haviland.

Field Notes on the Nesting of the Dotterel in Scotland. By Capt. C. S. Meares.

The Moults of the British Passeres. By H. F. Witherby. This installment and the one in the following number cover the warblers and thrushes.

British Birds. XI, No. 2. July, 1917.

The Severe Winter of 1916-17 and its Effect on Birds in the South of Ireland. By C. J. Carroll.— The mortality all over Ireland was "desperately heavy."

Some Notes on the Breeding Habits of the Merlin. By E. R. Paton.

British Birds. XI?, No. 3. 1917.

Field Notes on the Nesting of the Hobby. By Capt. C. S. Meares.

The Moults and Sequence of Plumages of the British Waders. By Annie C. Jackson.— A valuable article supplementing Mr. Witherby's papers on the moult of the Passeres. It is gratifying to read that the author would emphasize the fact that "colour change without moult, excepting of course effects due to abrasion and fading, plays no part in the sequence of plumages of the *Limicola*."

Avicultural magazine. VIII, No. 8. June, 1917.

The Red-breasted Goose (*Bernicla ruficollis*). By H. D. Astley.— With colored plate.

Birds in London and Suburbia. By Allen Silver.— An interesting paper especially to those who make "city lists" in this country.

Avicultural Magazine. VIII, No. 9. July, 1917.

On taming Parrots. By Rosie Alderson.

Bird Notes. VIII, No. 6. June, 1917.

Bird Life in the Firing Line. By Dr. N. S. Lucas.

Spectacled Owl (*Syrnium perspicillatum*). By Miss E. F. Chawner.—
With plate.

Bird Notes. VIII, No. 7. July, 1917.

A Cruise in the S. Y. "Vectis."—To Norway in 1904.

The Emu. XVII, No. 1, July, 1917.

Cooper's Creek Tree Creeper (*Climacteris waitei*). By S. A. White.—
With colored plate.

Birds of the Rockingham Bay District, North Queensland. By A. J. Campbell and H. G. Barnard.—An annotated list of 187 species.

Procellariiformes of Western Australia. By W. B. Alexander.

Description of a New Sub-species of *Platycercus elegans* (Gmelin).
By Edwin Ashby.—*P. e. fleurieuensis* (p. 44), from the Fleurieu Peninsula, South Australia.

The South Australian Ornithologist. III, Part 3. July, 1917.

Tasmanian Field Notes. By Edwin Ashby.

Birds of the North and Northwest of Australia. By Gregory M. Mathews.

Notes on the Mallee Fowl (*Leipoa ocellata rosinae*). By T. P. Bell-chambers.—Much detailed information on the nesting, with temperatures of the mound and periods of incubation of the eggs.

The Austral Avian Record. III, No. 4. July 21, 1917.

New Subspecies and Notes on Species. By G. M. Mathews.

The Rediscovery of two Lost Birds. By G. M. Mathews.—*Nesomalurus leucopterus* and *Diaphorillas textilis*, obtained by Mr. Tom Carter.

Notes on Some Extra-limital Parrot Names. By G. M. Mathews.

Silvester Diggles, Ornithologist. By G. M. Mathews.—Portrait and description of the parts of his 'Ornithology of Australia.'

Revue Française d'Ornithologie. IX, No. 98. June 7, 1917. [In French.]

Study of a Collection of Birds from Matto Grosso. By A. Menegaux (concluded).

Ostrich Raising in Madagascar. By C. Riviere (continued).

On *Ruticilla tithys* and *R. cairii*. By A. Menegaux. The latter is merely an early plumage stage of the former.

Ornithologische Monatsschrift. 40, Nos. 7 to 11. July to November, 1915. [In German.]

Observations in the Vicinity of the Moritzburg Ponds 1906-1914 (continued through all the numbers).

Ornithological Articles in Other Journals.¹

Kent, D. E. Colony of Virginia and Sora Rails (at Bridport, Vt.). (Bull. No. 3, Vermont Botanical and Bird Clubs, April, 1917.)

Howe, Inez Addie. Nesting of the Connecticut Warbler [at St. Johnsbury, Vt.] (*Ibid.*).—This record, far away from the known breeding range of the species, is so remarkable, and the presence of Mourning Warblers so suggestive, that we cannot but wonder if the observer is familiar with the plumages of the two sexes of the latter.

Morgan, E. D. Goshawks Unusually Numerous. (*Ibid.*) [At Woodstock, Vt.]

M(urphy), R. C. The Sooty Albatross Group [in the Brooklyn Museum]. (The Brooklyn Museum Quarterly, IV, No. 2, April, 1917.)

Berry, Wm. A Chair of Economic Ornithology. (Scottish Naturalist, No. 66, June, 1917.)—An interesting discussion of the problem of bird preservation.

Rintoul, L. J. and Baxter, E. V. Report on Scottish Ornithology in 1916 including Migration. (*Ibid.*, double number, 67 and 68, July–August, 1917.)—A valuable addition to this historic series which the Misses Rintoul and Baxter are so admirably continuing.

Beaupre, E. The American Golden Plover in Eastern Ontario. (Ottawa Naturalist, XXXI, No. 2, May, 1917.)

Saunders, W. E. Disappearance of the Blue Gray Gnatcatcher. (*Ibid.* No. 3–4, June–July, 1917.)

Smith, Bertram G. Peculiar Nesting Behavior of a Robin. (Seventeenth Rept. Mich. Acad. of Sci.)—The birds built five nests on successive steps of a fire escape. Two were completed and two eggs laid in one and one in the other. The bird incubated them alternately but soon deserted them both. The author considers that the similarity of the steps rendered the bird unable to recognize its nest site.

Oberholser, H. C. *Piranga rubra rubra* in Colorado. (Proc. Biol. Soc. Wash., XXX, July 27, 1917, p. 122.) The record of *P. r. cooperi* proves to be based on a specimen of *rubra*.

Oberholser, H. C. Autumn Water-bird Records at Washington, D. C. (*Ibid.*, p. 122.)

Oberholser, H. C. Mutanda Ornithologica. II. (*Ibid.*, pp. 125–126.)—Five names, mainly of parrots, are changed on account of being pre-occupied. *Nasiterna chloroxantha* (p. 126) is proposed in place of *N. pygmaea*.

Hollister, N. The Black Vulture in the District of Columbia and

¹Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Maryland. (*Ibid.*, p. 123.)—The two records are of especial interest in connection with that of Dr. Phillips (General Notes, *antea*).

Todd, W. E. C. New Genera and Species of South American Birds. (*Ibid.*, pp. 127–130.) *Idiospiza* (p. 127), type *Linaria inornata* Lafr.; *Myospiza humeralis meridanus* (p. 127), Guarico Lara Ven.; *Sporophila lineola restricta* (p. 128), Gamarra, Magdalena, Col.; *Sporathraupis cyanocephala hypophæa* (p. 128), Paramo de Rosas, Ven.; *Thlypopsis fulviceps intensa* (p. 128), La Palmeta, Santander, Col.; *Tachyphonus luctuosus panamensis* (p. 128), Gatun, Panama; *Diglossopsis cærulescens saturata* (p. 128), La Palmeta, Santander, Col.; *Myrmeciza læmosticta palliata* (p. 129), La Palmeta, Santander, Col.; *Hylophylax navioides subsimilis* (p. 129), Jaraquil, Bolivar, Col.; *Pæcilurus* (p. 129), type *Synallaxis candæi*; *P. atrigularis* (p. 129), Gamarra, Magdalena, Col.; *Brotogeris jugularis ezsul* (p. 129), Sierra de Carabobo, Ven.

Bartsch, Paul. Additions to the Haitian Avifauna. (*Ibid.*, pp. 131–132.)—*Porzana flaviventris hendersoni* (p. 131) subsp. nov.; *Dendroica petechia albicollis* (Gmel.), established as a distinct race and eleven other species added to the fauna of the country.

Patten, C. J. Western Black-eared Wheatear (*Enanthe hispanica hispanica*) on migration obtained on Tuskar Rock: A Bird new to Ireland. (Novit. Zool. XXIV, 1917, p. 1–16.)

Hartert, Ernst. Notes on Gamebirds. (*Ibid.*, pp. 275–292.)—*Caccabis* gives way to *Alectoris* on grounds of priority.

C. petrosus becomes *A. barbara*, Gmelin's *Tetrao petrosus* being *Ptilomachus fuscus* which therefore must be called *P. petrosus*.

The Greek Partridge should be *A. græca* Meisner, while two new races are described: *A. g. cypriotis* (p. 278) and *A. g. falki* (p. 280), from Cyprus and Russian Turkestan respectively.

A. heyi intermedia (p. 282), South Arabia; *Perdix p. italica* (p. 283), Chianti, Italy; and *P. p. armoricana* (p. 284), Rialle, France, are described as new.

Tetrao orientalis Linn. is fixed on the Sand Grouse which thus becomes *Pterocles orientalis* in place of *arenaria*.

Francolinus pondecianus interpositus (p. 288), Oudh, India; and *F. bicalcaratus ayesha* (p. 291), Rabat, Morocco, are described as new.

Hartert, Ernst. Some Further Notes on *Anthreptes malaccensis*. (*Ibid.*, p. 323.)

Platt, Chas. On Color in Animals. (Wild Life, June, 1917.)—Both June and July issues also contain excellent photographs of birds—Bittern, Black-backed Gull and Swallow.

U[prich], F. W. A Bird Injurious to Rice. The Yellow Headed Caque (Agelaius icterocephalus L.) (Bull. Dept. of Agr. Trinidad and Tobago, XVI, pt. I, 1917.)

Ingram, Geoffroy. Some Field Notes on the Nightjar. (Trans. Cardiff Nat. Soc. XLVIII, 1916.)

Clodius, G. Ornithological Report for Mecklenberg and Lubeck for

1912-1913. (Archiv. de Verein der Freunde der Naturgeschichte in Mecklenburg, Vol. 68, 1914.) [In German.]

Alvarado, Rodolfo. Catalogue of the Common and Scientific Names of the Birds of the Mexican Republic. (Bolet. de la Direc. de Estudios Biologicos, Mex., I, No. 5, pp. 471-559.) — A list of the technical and of the vernacular names each arranged alphabetically, the former following the nomenclature of the 'Biologia Centrali Americana'; and a systematic list of the technical names with their derivation. [In Spanish.]

Oberholser, H. C. Notes on the Fringilline Genus *Passerherbulus* and its Nearest Allies. (The Ohio Journal of Science, XVII, No. 8, pp. 332-336, 1917.) — This genus is claimed to be composite according to the standard adopted in separating it from *Ammodramus* and *Centronyx*, and either the three should be merged, when the name *Ammodramus* will prevail for the group, or *Passerherbulus* must be divided in three. In the latter case, *Ammospiza* is available for the Sharp-tailed Sparrow and a new name, *Thryospiza* is proposed (p. 332) for the Seaside Sparrow.

The worst feature of the whole situation is that the horrible name "*Passer herbulus*" proves to be a nomen nudum as originally proposed by Maynard and would have sunk into oblivion had not an innocent cataloguer of supposedly necessary changes in the A. O. U. Check-List, who abhorred the name, inadvertently added the two words necessary to give it status, and so not only perpetuated it but gained the opprobrium of being its author!

Thornton, R. W., J. E. Duerden and F. C. Smith. Report on the North African Ostriches (Report 2, Dept. Agric. of S. Afr., 1916) imported into South Africa in 1912.

The northern plumes are much superior to those of the southern species. The two birds were successfully crossed and there is every prospect of producing a much higher grade of plumes. It is difficult to keep the pure northern bird alive in South Africa.

Baker, E. C. Stuart. Game Birds of India, Burma and Ceylon. (Journ. Bombay Nat. Hist. Soc., XXV, No. 1, March 20, 1917.)

Hopwood, J. C. and Mackenzie, J. M. D. A List of Birds from the Chin Hills. (*Ibid.*) — 219 species.

Publications Received.—**Bancroft**, W. F. Directory of Officials and Organizations Concerned with the Protection of Birds and Game, 1917. Biol. Survey, U. S. Dept. Agr., August 2, 1917.

Bergtold, W. H., M. D. A Study of the Incubation Periods of Birds. Kendrick-Bellamy Co., Denver, Colo., 1917, 8vo., pp. 1-109. Price, cloth bound, \$1.50 postpaid.

Brooks, W. Sprague. Notes on Some Falkland Island Birds. (Bull. Mus. Comp. Zool., Vol. LXI, No. 7, June, 1917.) pp. 136-160, pls. 3.

Howell, Alfred Brazier. Birds of the islands off the Coast of Southern California. Pacific Coast Avifauna No. 12, Cooper Ornithological Club, pp. 1-127. Price \$1.50.

Kuser, John Dryden. The Way to Study Birds. G. W. Putnam's Sons, New York and London, 1917, 12mo., pp. 1-85, with 9 colored plates. Price, \$1.25 net.

Peters, James L. The Porto Rican Grasshopper Sparrow. (Proc. Biol. Soc. Wash., Vol. 30, pp. 95-96, May 23, 1917.)

Richmond, Chas. W. (1) Descriptions of two New Birds from Haiti. (Smithson. Misc. Coll., Vol. 68, No. 7, July 12, 1917.) (2) Generic Names Applied to Birds During the Years 1906 to 1915, inclusive, with Additions and Corrections to Waterhouse's "Index Generum Avium." (Proc. U. S. Nat. Mus., Vol. 53, pp. 565-636, August 16, [=25], 1917.)

Mathews, Gregory M. The Birds of Australia. Vol. VI, Part IV, pp. 297-372, June 27, 1917.

Mullen, W. H. and Swann, H. Kirke. A Bibliography of British Ornithology. Part V. Macmillan and Co., London, 1917. Price 6/-net.

Murphy, R. C. The Sooty Albatross Group. (The Brooklyn Museum Quarterly, April, 1917, pp. 97-101.)

Slater, W. L. Aves. (Zoological Record for 1915, May, 1917, pp. 1-74). Price 6/.

Shufeldt, R. W. Fossil Remains of What Appears to be a Passerine Bird from the Florissant Shales of Colorado. (Proc. U. S. Nat. Mus., Vol. 53, pp. 453-455, August 15, 1917.)

Trotter, Spencer. The Life Features of the Coastal Plain and the Piedmont. (Trans. Wagner Free Inst. of Science, Phila., Vol. III, 1917, pp. 33-44.)

American Museum Journal, The, XVII, No. 5, May, 1917.

Austral Avian Record, The, III, No. 4, July 21, 1917.

Avicultural Magazine (3), VIII, Nos. 8, 9, and 10, June-August, 1917.

Bird-Lore, XIX, No. 4, July-August, 1917.

Bird Notes and News, VII, No. 6, Summer, 1917.

British Birds, XI, Nos. 1, 2, and 3, June-August, 1917.

Bulletin British Ornithologists' Club, Nos. CCXXV and CCXXVI, May 25 and June 26, 1917.

Bulletin of the Charleston Museum, XIII, No. 5, May, 1917.

Bulletin of the Vermont Botanical and Bird Clubs, No. 3, April, 1917.

California Fish and Game, 3, No. 3, July, 1917.

Canadian Geological Survey, Summary Report for 1916, 1917.

Condor, The XIX, Nos. 3 and 4, May-August, 1917.

Emu, The, XVII, Part I, July, 1917.

Fins, Feathers, and Fur, No. 10, June, 1917.

Forest and Stream, LXXXVII, Nos. 7, 8, and 9, July-September, 1917.

Ibis, The, (10) V, No. 3, July, 1917.

New Jersey Audubon Bulletin, Nos. 20 and 21, June and September, 1917.

Oölogist, The, XXXIV, Nos. 6, 7, and 8, June-August, 1917.

Ornithologische Monatsschrift, 40, Nos. 4 and 7 to 11, April and July to November, 1915.

Ottawa Naturalist, The, XXXI, Nos. 2 and 3-4, May, and June-July, 1917.

Records of the Australian Museum, XI, Nos. 9 and 10, May 28, and July 12, 1917.

Revue Française d'Ornithologie, Nos. 98 and 99, June and July, 1917.

Royal Society for the Protection of Birds, 26th Annual Report.

Science, N. S., XLV and XLVI, Nos. 1173-1185.

Scottish Naturalist, The, Nos. 66 and 67-68, June and July-August, 1917.

South Australian Ornithologist, The, III, Part 3, July, 1917.

Wilson Bulletin, The, XXIX, No. 2, June, 1917.

CORRESPONDENCE.

Definite Localities.

EDITOR OF 'THE AUK':

In modern zoological work a knowledge of the geographic distribution of the various forms of animal life has become increasingly important. It is at least highly desirable, not to say essential, in systematic work, in the investigation of economic problems, in the enactment of protective legislation, and in practically every other phase of zoological activity. And the more exact this knowledge is, the greater its usefulness.

It is perhaps only those who make a special study of geographic distribution that realize to what extent ornithological literature is filled with *indefinite* data on the subject. A great many published records of occurrence are so inexplicit as to localities and dates as to be all but worthless. In the preparation of distributional maps and in the study of migratory movements the futility of indefinite records becomes particularly apparent. A case in point is a paper by Messrs. Philipp and Bowdish in the July issue of 'The Auk,' wherein the authors, for some unexplained reason, have failed to state any definite localities for a large number of breeding records, which would have been of real value if accompanied by proper geographical data. It is to be hoped that the authors will supply the desired data in full in a later issue of 'The Auk.'

Cases like the one just quoted suggest the urgent need for authors of ornithological papers to become impressed with the importance of supplying exact and detailed information as to localities and dates of occurrence.

There are unquestionably many of us who can add materially to the value of our papers by bearing in mind this need of definite records.

Very truly yours,

FRANCIS HARPER.

U. S. Biol. Survey, Washington, D. C.,
July 19, 1917.

[The editor feels responsible for the omission above referred to for had he noticed it and called the authors' attention to it, the desired information would surely have been furnished. For various reasons it may seem desirable to withhold the *exact* locality for the breeding of rare birds, but there can surely be no objection in publishing the county, which except in certain cases of varied topography would doubtless answer the needs referred to by Mr. Harper.—W. S.]

Appeal for Assistance in Work of the Biological Survey.

EDITOR OF 'THE AUK':

The Biological Survey, as is generally known, is engaged in compiling and collating distributional records of all North American birds and mammals. These records are compiled from all available published literature, from reports of field work by members of its staff, and from manuscript reports by voluntary observers throughout the United States and a large part of Canada. The Survey's file system of carded records doubtless constitutes the only source of fairly complete information regarding the distribution of North American birds and mammals, as at present known. As such it is constantly being consulted and utilized in the preparation of the Survey publications, the A. O. U. Check-List and its supplements, and the Indexes to 'The Auk,' as well as in various other ways.

The Biological Survey would take this occasion to invite all members of the A. O. U. to contribute bird migration reports and bird census reports for use in its work. Blanks for the purpose will be promptly sent to those who write for them. It is only by the accumulation of a vast amount of additional data that many problems in distribution and migration can be worked out satisfactorily. Reports from the South, West, and Pacific Coast are especially needed, and fall migration notes from the entire country are much to be desired. The importance of accuracy in all records can scarcely be over emphasized.

Since A. O. U. members are among the chief beneficiaries of this phase of the Biological Survey's work, it is hoped that this request for their coöperation will not go unheeded.

Very truly yours,

E. W. NELSON,
Chief, Biological Survey.

"The Way to Study Birds."

EDITOR OF 'THE AUK'

After reading several of the reviews of my recent book, 'The Way to Study Birds,' I have been tempted to write a few words in explanation. Apparently in my preface I rather failed in my attempt to give an adequate idea of the book's purpose. In this connection, however, I have perhaps my best clue furnished by a reviewer in 'The Nation,' who writes that I have given "a handbook to the study of a handbook." This then was my object: to make clear the way for the beginner so that the many ornithological "handbooks" could be of use to him; so that he can be brought to the viewpoint where he is able to advantageously employ them. To continue, as 'The Nation' amits, my book is "no substitute for the amply illustrated manuals by Chester Reed and others." I have used very much these same words myself, as perhaps anyone who has really read my book will remember. It is to make possible an understanding of the "manuals", and to give a course of study, which followed throughout holds good, that I wrote my book. But I did not consider it necessary to give more than fifty examples of my plan. By that time, an *average* person is able to understand the work and continue by self-instruction.

Unfortunately, in their review of my book, 'The Nation' made two scientific errors of fact. The Turkey Vulture or "buzzard" is a common summer resident throughout the area covered by my book and is not "entirely unknown" in any part for which it was written. This is similarly true of the Starling. It is, I hope, unnecessary to refute the other fact, as expounded by 'The Nation,' that, for example, an English Sparrow is no more abundant than a Belted Kingfisher. These are, however, minor mistakes, and my book was written, as so well expressed, with the object of being a handbook for the study of a handbook.

J. DRYDEN KUSER.

Bernardsville, N. J., August 30, 1917.

Concealing Coloration.

EDITOR OF 'THE AUK':

Here is Henry Drummond's paragraph on the concealing power of zebras' stripes, with a perfectly correct analysis of the thing's principle. I should have drawn attention to it long ago had I before now learned of its existence.

"When we look, for instance, at the coat of a zebra with its thunder-and-lightning pattern of black and white stripes, we should think such a conspicuous object to court, rather than elude, attention. But the effect is just the opposite. The black and white somehow take away the sense

of a solid body altogether; the two colors seem to blend into the most inconspicuous grey, and at close quarters the effect is as of bars of light seen through the branches of shrubs. I have found myself in the forest gazing at what I supposed to be a solitary zebra, its presence betrayed by some motion due to my approach, and suddenly realized that I was surrounded by an entire herd which were all invisible until they moved.

"The motionlessness of wild game in the field when danger is near is well known." (Henry Drummond, D. D., in 'Tropical-Africa,' 1888.)

This antedates all my writing on concealing coloration, and is the only publication that I know that does so.

Those European armies' universal adoption of concealment-by-pattern of snipers, autos, tanks, tents, etc., adds interest to the study of this universal animal-world principle, which the English and the Swiss naturalists assure me these armies have all got from my book.

It is somewhat amusing that while Europe's naturalists all read, and ultimately accepted my book, as I have heard from the English and the Swiss, and while thirty million or more soldiers are practicing it to save their lives, the American naturalists mainly continue in ignorance even of what it is that I state. Because I naturally dwell on the tremendous evidence that this practically universal concealing effect of animals' patterns is *no accident*, the American naturalist refuses to accept this inference and misses my SCIENTIFIC POINT. The artist's science is that of the laws of visibility; and all the artists in the world will tell him that my scientific point, viz. that patterns on an object *inevitably lessen its distinguishability* is straight goods.

Add to this, nature is practically always doing these patterns in colors that counterfeit, beyond all human painter-power, one or another of the wearer's typical backgrounds.

Must one believe that the average American is so much less intellectual than Europeans that while those millions of soldiers are all protecting themselves with this vast concealing device, the American naturalist can not even see the absolutely antipodal difference between *detecting* an object and identifying it by its particular form of concealment-pattern *after* he has detected the object itself!

Yours truly,

ABBOTT H. THAYER.

Monadnock, N. H., June 21, 1917.

NOTES AND NEWS.

DR. EMIL AUGUST GOELDI, a Corresponding Fellow of the American Ornithologists' Union since 1903, died suddenly at Bern, Switzerland, July 5, 1917, in the 58th year of his age. He was born at Ennetbühl, Canton of St. Gall, Switzerland, August 28, 1859. He studied at the Zoological Station at Naples and was an assistant of Prof. Ernst Haeckel at the Zoological Institute at Jena. In 1884 he went to Brazil and became associated with the museum in Rio de Janeiro. After the fall of the Emperor Dom Pedro II, in 1889, he retired from this position and lived for four years in the state of Rio de Janeiro. About 1894 he founded the museum in Para, now known as the Museu Goeldi. This institution which comprised not only a museum but also a zoölogical garden and a botanical garden was taken over by the state a few years later and Goeldi then became honorary director. In 1905, after 20 years of life in the tropics, he returned to Switzerland and took up his residence in Bern where, since 1908, he has been professor of zoölogy in the Cantonal University. He visited the United States in August, 1907, at the time of the meeting of the Seventh International Congress of Zoölogy in Boston.

Dr. Goeldi has published a number of papers in English, German and Portuguese on various branches of zoölogy, but chiefly on mammals, birds and fishes. He is also the author of a monograph on the mosquitoes of Brazil.¹ His best known publications on birds are his 'Aves do Brazil,' in two volumes, 1894-1900, and the supplement to this work entitled 'Album de Aves Amazonicas,' in three parts, 1900-1906, containing colored illustrations of about 400 species. He also contributed several papers to 'The Ibis,' including an important one on the 'Ornithological Results of a Naturalist's Visit to the Coast Region of South Guyana,' Brazil, in 1895. He was especially interested in studying the habits of birds and was the discoverer of the parasitic habits of *Cassidix oryzivora*. He was also deeply interested in bird protection and during his residence in Rio de Janeiro and in Para endeavored to secure the enactment of legislation for the protection of species which were being ruthlessly slaughtered for the millinery trade. Two of his memorials to the Governor of the State of Para were later translated into English and published under the title 'Against the Destruction of White Herons and Red Ibises on the Lower Amazon,' Para, 1904. The museum which bears his name will long remain a monument to the energy of Dr. Goeldi in encouraging natural history work in Brazil.—T. S. P.

ALFRED JOHN NORTH, a Corresponding Fellow of the American Ornithologists' Union since 1902, died of heart failure at Sydney, Australia, May 6, 1917, only five months after the death of his former chief and associate

¹ In this connection his portrait was published in Pop. Sci. Monthly, Aug. 1915, p. 171.

Dr. E. P. Ramsay. He was born in North Melbourne, Australia, June 11, 1855, and was educated in the public and grammar schools of Melbourne. Later he worked at the jeweler's trade for some years. At an early age he developed an interest in ornithology which was stimulated by visits to the National Museum at Melbourne and by the officers of this institution, Sir Frederick McCoy the director, and John Leadbeater in charge of ornithology. In 1878 he corresponded with Ramsay and eight years later went to Sidney to arrange the Ramsay collection of birds and the collection of eggs of the Australian Museum. After spending several months at this task he was asked to prepare the 'Descriptive Catalogue of the Nests and Eggs of Birds found Breeding in Australia and Tasmania' which was published in 1889. About this time he was appointed an assistant to the curator, Dr. Ramsay, and in 1891 was made ornithologist of the museum, a position which he retained until his death.

He has published many papers on the birds of Australia, among the more important of which are: 'Aves of the Horn Scientific Expedition to Central Australia,' 1896, 'List of Birds collected by the Calvert Exploring Expedition in Western Australia,' 1898, and a new and greatly enlarged edition in 4 volumes of his 'Nests and Eggs of Birds found Breeding in Australia and Tasmania,' 1901-14. His papers have appeared chiefly in the Proceedings of the Linnean Society of New South Wales, the 'Records' of the Australian Museum, the 'Agricultural Gazette' of New South Wales, the 'Victorian Naturalist,' 'The Ibis,' and the 'Proceedings' of the Zoological Society of London.

North devoted much attention to detailed studies of the life histories of certain species which occur in the immediate vicinity of Sydney. He was very careful in his statements and in some respects was one of the ablest ornithologists that have studied the birds of Australia. His labors have been commemorated in the names of two genera of birds, *Northiella* and *Northipsitta*, and in the Northern Banksian Cockatoo (*Calyptorhynchus banksii northi*), all described by Mathews in 1912.—T. S. P.

REV. WILLIAM ROGERS LORD, an associate of the American Ornithologists' Union since 1901, died in Dover, Mass., February 2, 1916, in the 69th year of his age. He was the son of Daniel Miner and Eliza Ann (Hardy) Lord, and was born in Boston, Mass., May 6, 1847. His early education was received at Williston Seminary, Mass., and in private schools in Brooklyn. He graduated from Amherst College with the degree of A. B. in 1875 and from the Union Theological Seminary, in New York, in 1878. During the next 17 years he held several pastorates in the east at Riverdale-on-Hudson, Wollaston Heights, Mass., and in Boston. From 1895 to 1898 he was located at St. Paul, Minn.; from 1899 to 1901 at Portland, Ore.; from 1902 to 1907 at Rockland, Mass.; and since 1909 at Dover, Mass.

Mr. Lord was deeply interested in birds and especially in popularizing

bird study and in bird protection. During his residence in Oregon he collected the material for 'A First Book upon the Birds of Oregon and Washington' which was published in 1901 and appeared in a revised edition in 1902. This book was promptly placed in the list for supplementary reading in the schools of Oregon by the State Text Book Commission. During the organization of the Oregon Audubon Society he took an active part in the work and gave a number of talks on birds to some 18,000 public school children and 4000 adults. He was a ready and pleasing speaker, and a frequent attendant at meetings of the Union where, through his genial manner, he made a large circle of friends.—T. S. P.

DR. BERT HEALD BAILEY, an Associate Member of the American Ornithologists' Union since 1913, died at Cedar Rapids, Iowa, June 22, 1917, from an abscess in the spleen. He was born at Farley, Iowa, May 2, 1875. Dr. Bailey graduated from Coe College in 1897 and received his master's degree from the same institution in 1900. In 1900 he also completed his course and received an M. D. degree from Rush Medical College, Chicago. He married Anna Wright Condit, of Des Moines, December 26, 1900. In September, 1900, he became Professor of Zoölogy and Curator of the Museum of Coe College, a position which he held at the time of his death.

He published a small volume entitled "200 wild Birds of Iowa" in 1906, and was the author of numerous short papers and notes on mammals and birds which appeared from time to time in the 'Proceedings' of the Iowa Academy of Science and in 'The Auk'. In addition, many valuable notes contributed by him appear in Anderson's 'Birds of Iowa.' At the beginning of his last illness, Professor Bailey was on leave of absence and was engaged in research along ornithological lines at the University of Iowa. He was especially interested in the hawks and owls and had nearly completed a paper dealing with the distribution and habits of the species found in Iowa. He was also engaged in collecting data for a work on the mammals of the State. He was diligently engaged in building up a good working college museum at Coe and outlined his ideas as to what such a museum should contain in a paper entitled 'The Building and Function of the College Museum,' printed in the 'Proceedings' of the Iowa Academy of Science for 1915. Professor Bailey was a keen and tireless worker and his untimely death is a distinct loss to ornithology in a State where workers of his ability are all too few. He was a member of the Wilson Ornithological Club and a Fellow of the Iowa Academy of Science.—I. N. G.

FRANCIS WINDLE, an associate member of the American Ornithologists' Union, died at his home in West Chester, Pennsylvania on February 24, 1917, in his 72nd year.

Mr. Windle was born in West Marlboro, Chester County, Pennsylvania. He lived most of his life in West Chester, having received his education in the schools of his native county and at the University of Michigan, at which latter place he took his law course. He was admitted to the bar at West

Chester about thirty-five years ago, and practiced his profession there for nearly twenty years.

At the outbreak of the Civil War Mr. Windle ran away from school to enlist in Company E 152nd Pennsylvania Heavy Artillery, serving as a private for a year and a half.

In 1879 Mr. Windle was married to Miss Margaretta E. Thatcher who survives him.

Owing to poor health Mr. Windle found it necessary to give up the practice of law and seek out door employment. He secured a position with one of the extensive nurseries at West Chester. Here his wide knowledge of botany acquired during his frequent outing trips, which constituted his chief recreation for years, proved a valuable asset. During his recreational activities his time was about equally divided between his study and observation of plants and birds, with the result that he became skilled in both botany and field ornithology.

For several years Mr. Windle taught biology at Darlington Seminary, West Chester, and also did some teaching at the State Normal School in the same place.

For about eleven years prior to his death he was connected with the Bureau of Zoölogy, Department of Agriculture of Pennsylvania, with headquarters at Harrisburg. He became assistant Orchard Inspector for the eastern end of Pennsylvania, and while acting in this capacity was made a member of the Chestnut Blight Commission, and later of the White Pine Blister Rust Commission. The duties of these positions took him all over the eastern end of the state and kept him out of doors where he could indulge his passion for botany and ornithology. He was a member of the Philadelphia Botanical Club and of the Delaware Valley Ornithological Club and kept constantly in touch with men in these fields.—C. E. E.

AN OBITUARY notice of Covington Few Seiss for many years an Associate of the Union, who died at Philadelphia, September 5, 1915, will be found in 'Cassinia' for 1916. A notice of Charles S. Welles, an associate who died February 24, 1914 is to be found in 'Entomological News' for that year.

1847-1917.—In 'The Auk' for July reference was made to the unique gathering of members of the A. O. U. at Plummer's Island on April 20, 1917, in honor of the 70th birthday of the secret Union. In addition to Mr. John H. Sage several other members of the Union reach three score and ten this year. These members are: Mr. Jean Morcom (Mar. 16), Dr. Anton Reichenow, editor of the 'Journal für Ornithologie' (Aug. 1), Dr. Louis Bureau of Nantes, France (Nov. 18), and Victor Ritter von Tschusi zu Schmidhoffen, the eminent Austrian ornithologist (Dec. 28). Mention should also be made of Mrs. Dana Estes (Sept. 4), sister of the late Dr. Elliott Coues and formerly Miss Grace Darling Coues, in whose honor Grace's Warbler was named.

Seven others born in 1847 did not enjoy as long a span of life but nevertheless left their names indelibly impressed on the records of ornithology. The foreign list includes Dr. R. Bowdler Sharpe, author of the 'Hand List' and 11 volumes of the 'British Museum Catalogue of Birds,' Dr. Emil Holub, the eminent African explorer, and the late Earl of Crawford who in voyages in the 'Valhalla' made considerable additions to our knowledge of the birds of the West Indies. The American names include Lucien M. Turner, who collected in Alaska, Joseph H. Batty, taxidermist and field collector, Miss Genevieve Estelle Jones who initiated the great work on the nests and eggs of the birds of Ohio, and Albert Willcox, benefactor of the National Association of Audubon Societies, whose legacy placed the work of the association on a permanent foundation. The class of 1847 has extended its energies into diverse fields and filled an important place in the progress of ornithology. Scarcely any other single year has produced as many active workers in this field, and it is interesting to note that 7 of the 13 names above mentioned are enrolled among the members of the A. O. U.—T. S. P.

THOSE who are interested in the problem of animal coloration which under the caption of 'protective' or 'concealing,' coloration has figured quite extensively in ornithological literature may read with profit an article by W. H. Longley in the 'Journal of Experimental Zoology,' Vol. 23, No. 3, entitled 'Studies upon the Biological Significance of Animal Coloration.' His work is based upon the reef fishes.

THE time has arrived when all members of the A. O. U. should make arrangements to be present in Cambridge, Mass., on November 13-15, the dates fixed upon for the thirty-fifth stated meeting of the Union.

A number of members are serving their country in one capacity or another and some of them will of course be unable to take part; the great majority of the membership however can attend and we would earnestly urge them to be present. Cambridge offers unusual attractions to the ornithologist and the generous hospitality extended to the Union on previous occasions is a matter of record. In England, Australia, France and Russia ornithological activities have not been permitted to come to a standstill on account of the war, and those who have not been called to service have taken it upon themselves to continue the meetings and publications without cessation through these trying times, so that their favorite science may not suffer. It would seem that we in America could not do better than to follow their example.

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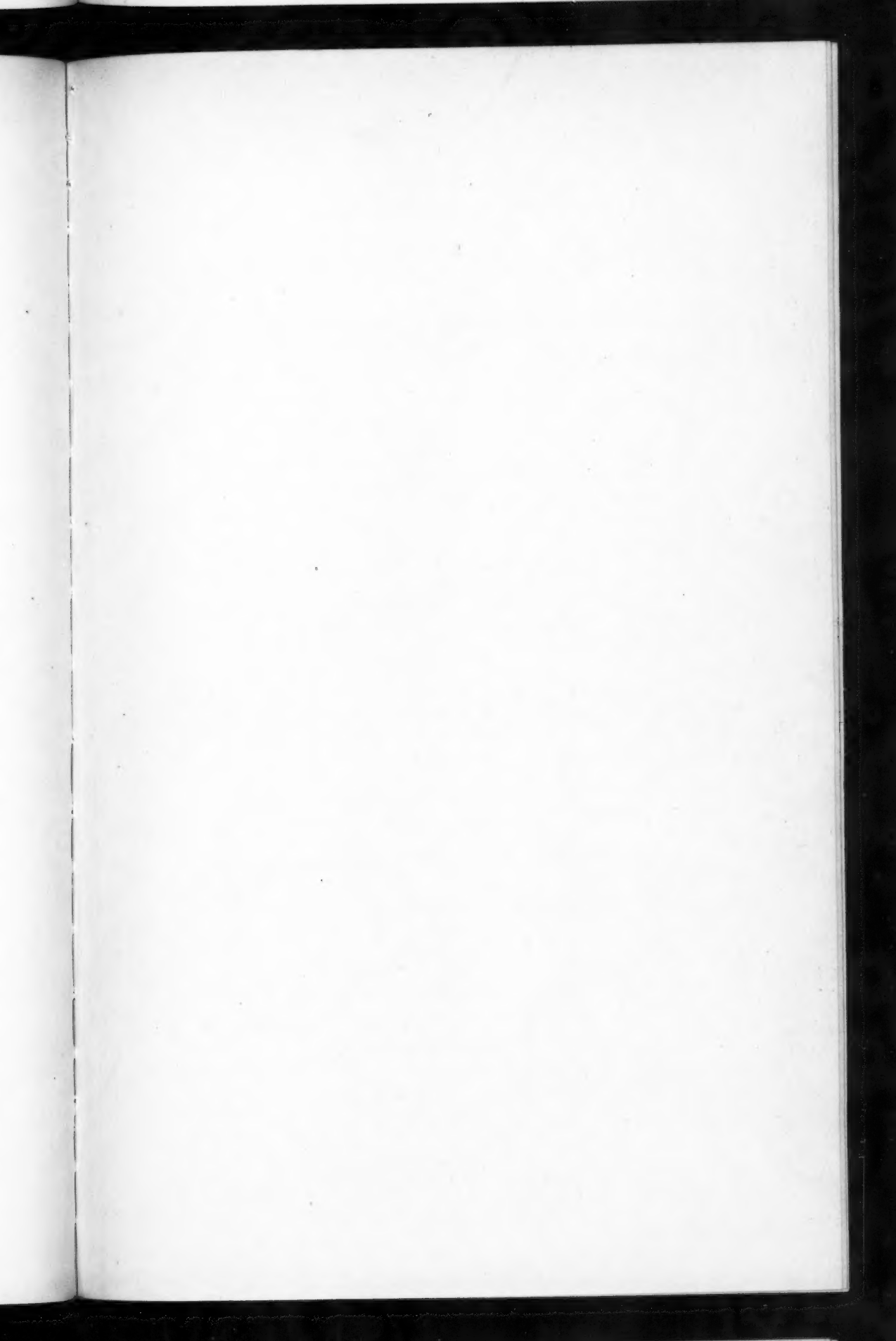
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ERRATA.

- Page 33, line 35, for **vallisineria** read **valisineria**.
" 40, " 31, for **PIGMY** read **Pygmy**.
" 49, " 16, for *nanus* read *nana*.
" 66, " 37, for *garrulus* read *garrula*.
" 89, " 1, for *C. v. gundlachii* read *C. m. gundlachii*.
" 136, " 10, for "Bec-sie" read "Bec-scie."
" 155, " 18, for northward read southward.
" 235, " 37, for *Cetrastes* read *Tetrastes*.

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Meeting	Date	Place	Fellows Present	Total Membership
1	1883, Sept. 26-28	1st New York	21	23
2	1884, Sept. 30-Oct. 2	2d New York	16	143
3	1885, Nov. 17-18	3d New York	16	201
4	1886, Nov. 16-18	1st Washington	20	251
5	1887, Oct. 11-13	1st Boston	17	284
6	1888, Nov. 13-15	2d Washington	20	298
7	1889, Nov. 12-15	4th New York	20	400
8	1890, Nov. 18-20	3d Washington	20	465
9	1891, Nov. 17-19	5th New York	14	493
10	1892, Nov. 15-17	4th Washington	20	557
11	1893, Nov. 20-23	2d Cambridge	17	582
12	1894, Nov. 12-15	6th New York	15	616
13	1895, Nov. 11-14	5th Washington	19	667
14	1896, Nov. 9-12	3d Cambridge	14	673
15	1897, Nov. 8-11	7th New York	18	679
16	1898, Nov. 14-17	6th Washington	21	695
17	1899, Nov. 13-16	1st Philadelphia	16	744
18	1900, Nov. 12-15	4th Cambridge	19	748
19	1901, Nov. 11-14	8th New York	18	738
20	1902, Nov. 17-20	7th Washington	25	753
20a	1903, May 15-16	1st San Francisco	7	—
21	1903, Nov. 16-19	2d Philadelphia	19	775
22	1904, Nov. 28-Dec. 1	5th Cambridge	17	808
23	1905, Nov. 13-16	9th New York	17	860
24	1906, Nov. 12-15	8th Washington	24	750
25	1907, Dec. 9-12	3d Philadelphia	20	850
26	1908, Nov. 16-19	6th Cambridge	17	888
27	1909, Dec. 6-9	10th New York	19	866
28	1910, Nov. 14-17	9th Washington	23	897
29	1911, Nov. 13-16	4th Philadelphia	18	887
30	1912, Nov. 11-14	7th Cambridge	18	929
31	1913, Nov. 10-13	11th New York	28	992
32	1914, Apr. 6-9	10th Washington	27	1101
33	1915, May 17-20	2d San Francisco	11	1156
34	1916, Nov. 13-16	5th Philadelphia	26	830*

The next regular meeting — the 35th Stated — will be held at Cambridge, Nov. 13-15, 1917.

* Decrease due mainly to change of date from spring to fall making 18 months without an election. 180 were added at the Philadelphia meeting.

